

The Iron Age

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A Large Slotting Machine.

In order to meet the increasing demand for ponderous and heavy machine tools, the Hewes & Phillips Iron Works, of Newark, N. J., have designed a series of tools especially adapted for heavy forge, marine and railway equipment shops, the slotting machine illustrated in the cut being one of that number. The machine shown will take a piece of work 54 inches high from the table, and will swing 12 feet diameter from the center of the tool to the face of the upright. The cutter-bar is moved by a V rack and pinion of steel, driven by their well-known worm-gearing device. The machine is driven by 1½-inch wide belts, separately shifted, having a speed of 130 to 1 of the tool. The weight of the bar is overbalanced, so that any backlash of gearing is avoided, the strain being always in the same direction. To avoid wear of the accurately wrought surfaces of the bar and its attendant gibs, it is lubricated by an oil-cup on top of the bar, which oils the eight surfaces continuously, and in such a manner as to entirely exclude dirt and grit. The stops or dogs for working the feed shifting devices are attached to the tool-bar, sliding in a dovetailed groove in the center of its face, their size and weight necessitating their being worked by a rack and pinion on the side of the cutting-bar. The feed is entirely independent of the shifting device, although worked from opposite ends of the same stop. The feed always takes place on the upper end of the stroke, and requires a movement of only 3 inches of the bar. This is not an easy problem when the load to be moved may be 20 tons. The cutter-bar guide has a vertical adjustment of 30' to accommodate work of different height. This is accomplished by means of two screws and cross-shaft, within convenient working distance of the floor. The table, which is circular and pierced with T-slots, has power movements in six directions, which can be changed at will without stopping the cut, every movement of the feeding or shipping devices being within easy reach. The tool-holders for both inside and outside work are self-relieving on the upper stroke, avoiding the necessity of dragging the cutting edge of the tool over the work. When working a cut not requiring the circular motion, the table can be clamped fast and solid at the four corners of the cross-slide, securing it against the possibility of a change of auger, and relieving the circular gibbed surface entirely from the strain of the cut. The belt-slipper can be worked by hand from a lever on the side of the machine in full view of the cutting tool, making it especially convenient in starting a cut or setting a tool, the man operating the machine having a full view of every movement. The frame of the machine is in two pieces bolted together on the plane of the carriage. The upper frame is undergibbed to the lower piece, and steel keys are driven in the back of the gib, so that in order to spring this joint it would have to tear the tongue of metal 6 inches thick extending entirely across the face of the upper frame. The sliding surfaces of the carriages and tool-bar are all at right angles to each other, so that the pressures on all surfaces are normal to those surfaces.

Decisions on Re-Issued Patents.

A decision was rendered by the Supreme Court of the United States at Washington, on the 14th inst., in the patent case of Alexander Cochrane and others, appellants, vs. the Badische Anilin and Soda Fabrik. Appeal from the Circuit Court for the Southern District of New York. This was a suit in equity brought by the Badische Anilin and Soda Fabrik, a corporation organized under the laws of the Grand Duchy of Baden, against Alexander Cochrane and others, for the alleged infringement of a reissued patent granted April 14, 1871, to Charles Graebe, of Frankfurt-on-the-Main, and Charles Liebermann, of Berlin, for "an improvement in dyes or coloring matter from anthracine." The court holds that if the claim of the patent is construed so broadly as to cover the defendant's article, it is wider in its scope than the original actual invention of the patentees, and wider than anything indicated in the specifications of the original patent. If the claim is construed so as to cover only the product which the process described in it will produce, it is not shown that the defendant's article is that product or can be practically produced by that process. The decree of the Circuit Court is therefore reversed and the case remanded, with directions to dismiss the bill of complaint. Opinion by Justice Blatchford.

The court also rendered a decision in the patent case of the Turner & Seymour Manufacturing Company, appellants, vs. the Dover Stamping Company. Appeal from the Circuit Court for the District of Connecticut. This was a suit brought by the Dover Company against the Turner & Seymour Company, for alleged infringement of a reissued patent on an improved form of egg-beater. The court holds that the reissued patent is void because its claims are broader than those of the original patent, and were made broader simply to maintain a monopoly which was desired, but which the claims of the original patent did not secure. The decree of the Circuit Court is reversed and the cause remanded, with directions to dismiss the bill. Opinion by Justice Matthews.

In these cases, says the New York Times, the court thus reaffirmed a principle the establishment of which two or three years ago encouraged the farmers of the West and the manufacturers who represented them to continue their fight against the owners of the broad reissued patents which were said to cover all kinds of driven-tube wells and wire fences. They received additional encouragement when Judges Shiras and Love, of the Circuit Court, decided in Iowa, one year ago, that the driven-well patents were invalid because they were reissues broader than the originals, and when Judges McCrary, Love and Treat held, in St. Louis, not long afterward, that the barbed-wire patents were void for the same reason. If it be true that the reissues in these important cases are broader than the originals, the final decisions of the Supreme Court must be against the owners of the patents, and hundreds of thousands of farmers who have been

structed by the Government. Tin mining has been carried on in Selangor by the Chinese for many years, and upward of 20,000 men are engaged in the industry. It is claimed that great advantages exist in the Malay Peninsula as compared with Australia, as well as Cornwall, both as regards supply of metal and the cost of labor. Tin, again, is considered useful as ballast, especially for ships with light cargoes, such as tea. The rate of freight from Singapore to London is said to be about \$2.50 per ton.

The Legal-Tender Decision.

With a comprehensive view of the requirements of the case, at the request of bankers and professional men of New York, Senator Kiernan has introduced concurrent resolutions reciting that the Legislature of this State regards with surprise and alarm the recent legal-tender decision, and re-

no authority to sit in judgment upon the acts of Congress done or made in pursuance of the aforementioned general purposes, thereby making Congress irresponsible to the supreme judiciary of the land in respect to a wide range of legislation of vital importance to the material interests and the political rights of the people; be it therefore

Resolved, 1. That the Legislature of the State of New York hereby declares that it regards said decision of the Supreme Court with surprise and alarm: 1. Because it constitutes other than gold and silver a legal tender, and, in so doing, violates the stability and the force of contracts which the Constitution intended to sacredly protect. 2. Because it involves a large surrender of the original powers of the Supreme Court as final arbiter on the constitutionality of laws enacted by Congress; and 3. Because, in being thus exempted from judicial check,

ever reached before was in the previous year, when 12,500,000 acres were disposed of. Only once before did the sales reach 9,000,000 acres, so it will be seen that the sales of last year were entirely unprecedented. The most of the increase was in Dakota, where 6,680,595 acres were disposed of. The States of Nebraska, Minnesota and Oregon rank next in the list of big land sales, while the Territory of Washington shows sales of nearly 1,000,000 acres. The greater proportion of these land transactions, it will be seen, are in the States and Territories adjacent to the Northern Pacific Railroad, and it is probable that much of the activity in this kind of property is due to the completion of that important line.

South American Iron-Making.

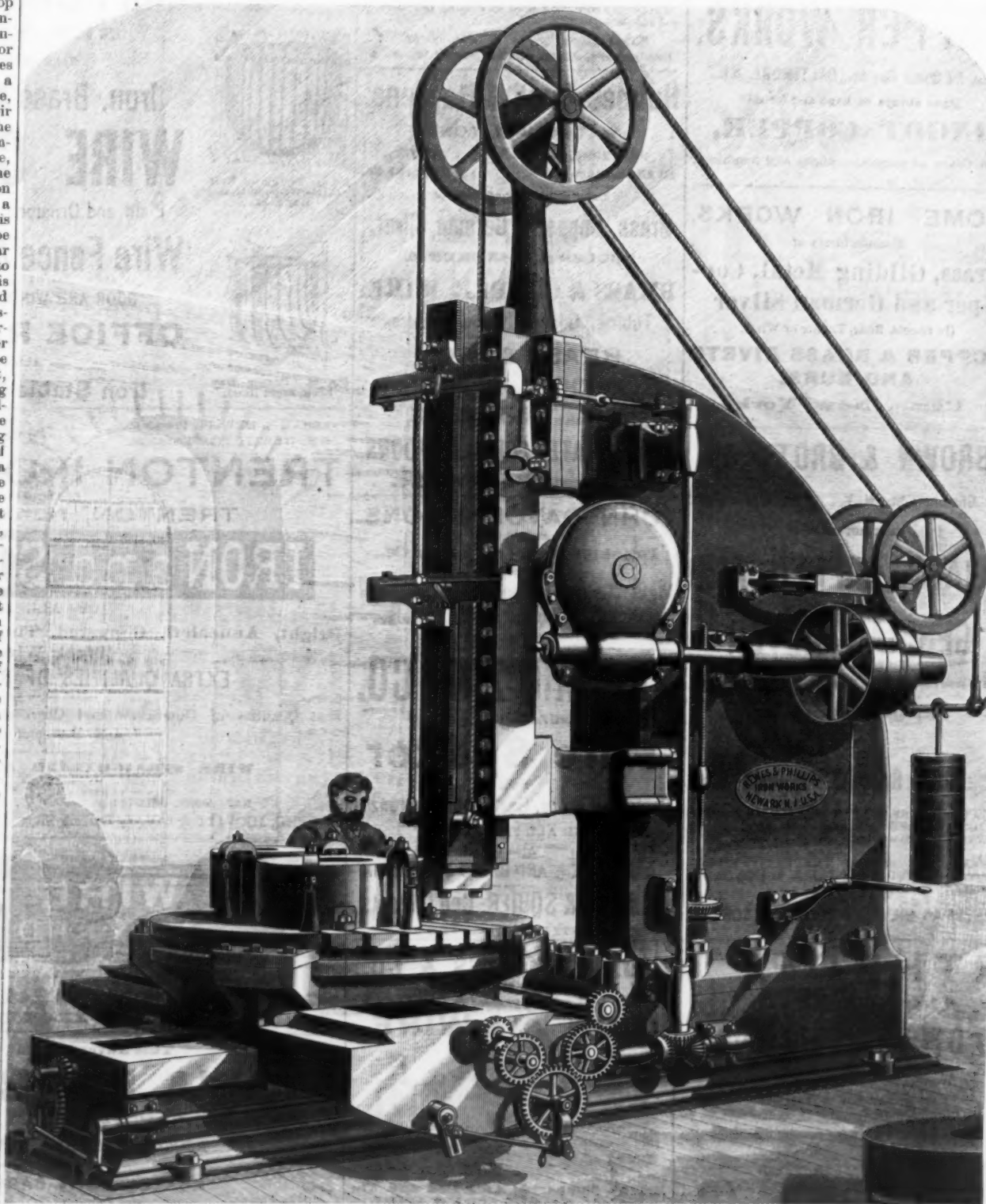
Mr. Thomas Hickey, of Pittsburgh, has recently returned from South America, where he was employed by the Government of Colombia in helping to establish a rolling mill in that country. He was one of six men for whom Mr. Martin, secretary of the Amalgamated Association, made a contract with the Colombian Government. The contract was for three years, the men to be paid so much per year, and also a percentage on the tonnage of iron produced. Mr. Hickey, previous to his going South, had been employed as a puddler in Shoenberger's mill. He quit Pittsburgh in the spring of 1880, leaving behind a wife and family, to lend his knowledge of the iron business to a country where blast and puddling furnaces were unknown. The attempt of the Colombian Government to establish a rolling mill was the first in the history of South America. Mr. Hickey states that large quantities of excellent ore are to be found in that country, and it is only a question of a short time until the business of iron-making will be followed with profit.

The mill at which Mr. Hickey was employed and helped to establish is located at Samaca, in the middle of a large iron ore district. The Government is exceedingly anxious to manufacture railroad iron in order to extend the railroad facilities in that country. Already a blast furnace and puddling furnaces have been started with a train of small rolls. A few English operatives are also employed by the Government, and the work of completing the mill, in order to manufacture all kinds of iron, is being pushed as rapidly as possible. What is most needed there, says Mr. Hickey, is a practical chemist who understands mixing. This would enable them to get along faster and with more certainty of success, as that knowledge is not possessed by operatives.

The Engineer states that the world's average product of sulphur is about 280,000 tons, of an average value of 109.20 lire per ton = 30,793,000 lire, or over £1,200,000. Of this total, Sicily produces 242,000 tons. There is an export duty of 11 lire per ton on sulphur, and the average export is 216,000 tons. The Sicilian sulphur is mostly exported raw, as it comes from the kilns. It is of seven qualities, the values varying from 101 to 115 lire per ton. Except in the better-worked "solfare," the separation of the sulphur from the earths in which it is contained is still conducted in Sicily by means of kilns (calcuroni), which do not require any additional fuel, but which entail the consumption and loss of about one-third of the sulphur itself. About 18,000 hands are employed in the Sicilian "solfare," of whom about 14,000 work in the interior of the mines, including those employed in the transport of the ore to the surface. The sulphur in many mines is still carried to the surface on the backs of boys called "carusi," of whom there are about 3500.

Arrangements have been made by the British Board of Trade and the lighthouse authorities for a further reduction of 10 per cent. in the rate for light duties now levied on shipping. The effect of this reduction, which was to go into operation on the 1st inst., will be to increase the present abatement from 60 per cent. to 70 per cent. of the amount which was leviable for light dues when the control of the Mercantile Marine Fund was first placed in the hands of the Board of Trade in 1853. The shipowners will thus, in addition to further substantial relief which has been given to the home trade and to certain over-sea voyages, have to pay less than one third of the rate leviable in 1853. The present remission of light dues will probably exceed \$500,000 per annum.

A novel as well as interesting piece of engineering work has recently been accomplished at Bristol, England, which consisted in the moving of a foot-bridge 134 feet in length, bodily, down the river a considerable distance. The pontoons by means of which the bridge was floated to its new position consisted of four 80-ton barges, braced together so as to form one solid structure 64 feet in width, and were placed in position soon after the tide commenced to rise. At 6 o'clock a. m. the top of the stages, which was 24 feet above the water, touched the under part of the bridge, and in a quarter of an hour later both ends rose from their foundations. When the tide had risen four feet the stage and bridge were floated to the new position, when at 8.30 the girders dropped on to their beds.



LARGE SLOTTING MACHINE, BUILT BY THE HEWES & PHILLIPS IRON WORKS, NEWARK, N. J.

led by their disagreeable experience to attack the entire system of patent laws will score a victory.

Selangor Tin-Mining Company.—The Shanghai papers contain reports of the first annual meeting of the Selangor Tin-Mining Company, of Shanghai, lately held in Shanghai. The company was formed in August, 1882, to work a concession of 1000 acres of land in the Malay Peninsula. Three years are allowed for making selections of four blocks of land of 250 acres each, and hitherto the directors appear to have been largely occupied in testing the metallic richness of the land, by boring and in other ways, before making the final selections. So far only one block has been definitely taken, and clearings, the construction of drains, of the necessary buildings and the preliminary excavations have been commenced. The requisite machinery and smelting appliances have been ordered, and the directors hope to enter the market with a supply of tin early this year. A line of railway is being con-

solving that a convention of the States should be held at the earliest possible date to suggest amendments to the Federal Constitution to remedy the dangerous tendencies toward the usurpation of power. The following is the full text of the resolutions:

Whereas, The Supreme Court of the United States, in a decision bearing date of March 3, 1884, in what is commonly known as "The Legal-Tender Case," declares that Congress possesses a "sovereign" power to constitute paper money a legal tender in the payment of debts; and

Whereas, That court declares, in said decision, that Congress is the sole authority to determine what laws are "proper and necessary" for giving effect to certain very broad and general purposes described in the Constitution of the United States, as "to provide for the common defense and general welfare of the United States, and to regulate commerce among the several States;" and

Whereas, Said court declares that it has

Congress is so far made a sovereign power, irresponsible to the people, and the people are deprived of that sovereign control over the acts of their delegated representatives which it was the intention of the Federal Constitution to guarantee unto them.

Resolved, 2. That, in view of these revolutionary tendencies of said decision, and of the peril in which the political rights of the citizen and the reserved rights of the States are thereby placed, we do hereby declare it to be the conviction of the Senate and Assembly of this State that a convention of the several States of the Union should be held, at the earliest convenient opportunity, to consider what amendments to the Constitution of the United States may be properly adopted to remedy these dangerous tendencies toward the perversion and usurpation of power.

The sales of Government land during the past year, says the Bulletin, were by far the greatest ever made in a single year, amounting to 16,830,455 acres. The highest point

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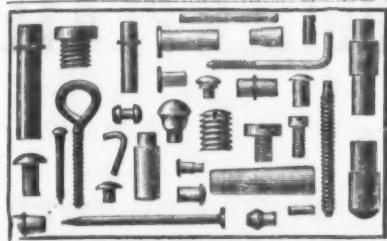
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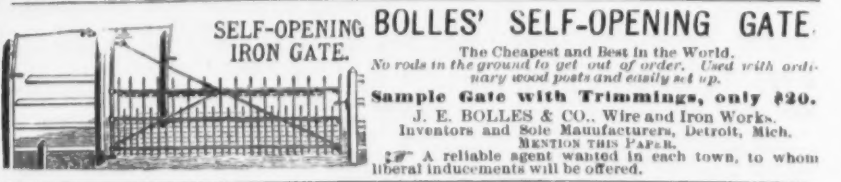


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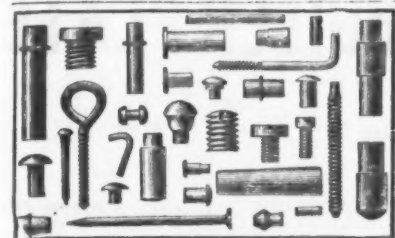
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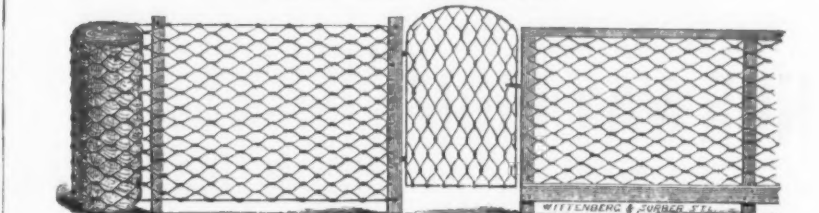
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The Pneumatic Pulverizing Company, of New York City, have patented a new method for eliminating sulphur or other objectionable elements from ores. The ores are first pulverized and then subjected to the action of highly superheated dry steam, chlorine or other vapors or gases under pressure. Two or more opposing currents of such vapors or gases are used, and the apparatus is so constructed that the currents will charge themselves with the granulated ore, and will carry and propel the same against each other at a focal point within a retort. This retort is heated by a furnace sufficiently to raise the temperature of the materials treated and carry out the process of desulphurizing. After this the combined volumes are discharged through a pipe into reservoirs prepared to receive them.

A new hollow metal handle for table cutlery has been patented by S. E. Jerald and E. R. Lawton, of West Cheshire, Conn. The blank is made with a taper, and two lips are formed at the butt end. The edges are then bent over and soldered to form the tube, which is then flattened into the ordinary knife-handle shape. Finally the lips are bent edge to edge and soldered together, thus closing the butt and completing the article. For making more expensive goods a piece of brass tubing is used in place of the blank.

A tapers pipe-support to hold and get the pipe out of the way of a tapers to be inspected and worked with has recently been patented by F. W. Gordon, of Pittsburgh, Pa. The pipe is provided with and supported on trunnions, and adapted to be turned into a horizontal position above the plane of the tuyeres. Being fairly balanced, the operation requires but little labor, and there is no sudden falling back of the heavy pipe, as usual upon release of the supporting devices. The horizontal position of the pipe leaves a clear space for working at the tuyeres. Before the pipe can be turned a clamp-screw must first be loosened.

An apparatus for scaling and pickling metal plates, recently patented by H. and H. B. Chess, of Pittsburgh, Pa., is designed to provide easy means for handling and transferring the material while being treated. The acid tanks, fresh-water tanks and the live-water tank are rigidly clamped together and constitute a complete set for scaling, rinsing and neutralizing. The apparatus provides for the removal of the sheets in bulk from a wagon directly to the successive acid and rinsing tanks, with automatic agitation in them all, which will first clean the metal of the scale and then of the acid. The sheets are then, after coming out of a stationary steam drying-box, deposited on a wagon similar to that from which they were taken, and are now in a position to be readily handled in subsequent operations.

A soldering iron in which the soldering "copper" or iron may be readily adjusted and held at different angles to the handle has been invented by W. B. Choate, of Aurora, Ill. The soldering copper has a ball on one end which enters between two jaws of a bifurcated spring handle. A ring slides over the jaws of the handle by which they are pressed together and held against the soldering copper. By sliding the ring back the copper is released. The jaws are shaped in such a manner that the ball rests snugly between them.

The patent right to a wire bale tie has been assigned to J. L. Clark, of New York City. This tie is formed of a double wire twisted together, and turned first upward and backward to form the hook, and then forward, downward and backward to form a brace. When a strain is applied to the tie it is impossible for the loop on its engaging end to escape from the hook, because it would first have to be moved backward in order to be freed from the seat. The brace is passed through the loop, and is thus supported in such a manner that the hook cannot be straightened out.

A metallic custom-house seal is patented by E. J. Brooks & Co., of New York City. It consists essentially of a sheet-metal strip having a cup-shaped depression near one end for retaining a soft lead seal. At its other extremity the strip has an anchoring projection which, when the strip is folded, passes through a threading-hole and fastens in the lead. The lead is further provided with a central detective aperture in its top or face to expose the anchoring projection and show the construction of the seal, thus making it difficult to counterfeit.

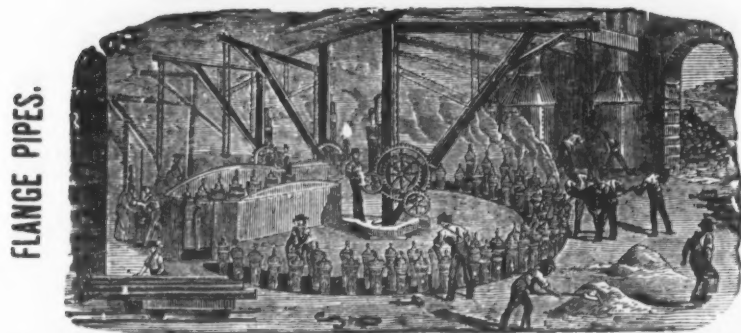
An improvement in the checker-work for regenerator furnaces consists in making the ends of the bricks conical or pointed at their right and left ends. In this way an increased surface of irregular form is obtained. This surface breaks or divides the currents of gas or air, and affords a larger absorbing or radiating surface, by which the air or gas is more thoroughly heated. It is claimed that the force of the currents of air and gas are retarded in a less degree, and the bricks are less liable to be cut and injured by the currents of heat. W. Swindell, of Allegheny, Pa., is the patentee of this improvement.

An alloy for coating sheet metal and wire without pickling consists of lead, zinc, tin and borax or borate of soda. The compound is formed by melting the several metals together, and then thoroughly intermingling the borax therewith. The alloy is spread, rubbed or pressed into the article to be coated, and forms a coating sufficient to protect the iron from oxidation. The inventor is J. H. Legge, of Pittsburgh, Pa.

A novel mode of producing clean surfaces on iron or steel, which renders the metal less liable to subsequent oxidation than with the ordinary finish, has been patented by L. D. York, of Portsmouth, Ohio. A loop or thick mass of the metal is subjected, at a high temperature, to a rapid succession of alternate bendings in opposite directions by passing it through rollers arranged to induce that effect. Simultaneously streams of water are thrown on the surface, and immediately thereafter the metal is subjected to reducing rollers. The chilling effect of the water detaches the scales. The reduction in thickness and in temperature follow so rapidly that further oxidation does

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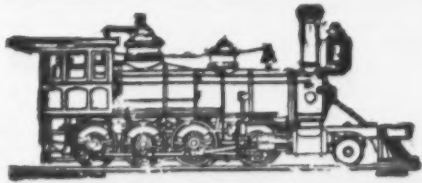
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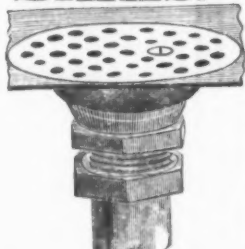
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One of the strong points of these sinks is the new coupling with which they are now supplied and which is pronounced by all plumbers the best on the market. It is used with both lead and wrought-iron pipe; is a neat, reliable coupling, and is easily detached for the purpose of pumping out the pipe. The strainer and all parts of the coupling are threaded, and are furnished with all sinks without extra charge.

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Drilled and Wire Jointed, Japanned, Figured Enam-
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IRON AND BRASS PUMPS,

Cistern, Well and Force Pumps, Yard Drive Well,
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We beg to call the attention of Architects, Builders, Dealers, and all interested parties, to our Spiral Spring Hinge, knowing it to be an effective and durable one, neat in appearance, easy to put on, and not liable to get out of order. The Springs are made from wire made expressly for us and for this particular purpose, with the view of great elasticity, durability and power. They produce a continuous pressure from the point where the door is wide open until it is closed and then hold it perfectly in position. It has a solid pintal in connection with short hollow ones, causing little or no friction, the whole power of the spring being exerted in swinging the door. It is Fast Joint, and can be used for either right or left hand, allowing the dealer to carry less stock, and the builder will never get the wrong hand.

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not occur, and, by the action of smooth rollers for the reducing rolls, surfaces are produced on the finished metal which are unusually perfect. The metal, it is claimed, will be almost entirely clear of the common black oxide which is present on iron and steel as ordinarily rolled.

TRADE PUBLICATIONS.**Heat and Light.**

The Standard Heat and Light Company, whose factory or show-rooms are No. 316 Race street, Philadelphia, have issued an illustrated pamphlet describing their apparatus and setting forth the claims made for their system. A full-page picture shows a front interior view of the company's show-room, in which may be seen gas jets for illuminating purposes, furnaces for different metallurgical and chemical operations, heaters, ranges, fire-pots, laundry heaters, &c., all at work, thus illustrating the application of the fuel prepared. A second full-page picture shows a back interior view of the company's show-rooms, illustrating some constructive features of the apparatus in which the fuel is produced. A third illustrated page shows a section of the apparatus and cylinders used in the Standard Heat and Light Company's system of heating and lighting. The proposition is made to furnish to country towns, villages, churches, halls, public buildings, city and country residences, light at a cost of 75 cents per 1,000 cubic feet. The light furnished by this company, it is asserted, is safer and cheaper than the use of coal-oil lamps, and is equal to any gas now used for illuminating purposes. The construction of the generator and gas-dryer in connection with the pressure pump is such that the supply becomes automatic. Gas is generated only when it is required. No fire is used, and accordingly it is stated there is no danger in that direction. The latter part of the pamphlet is devoted to a display of testimonials and to illustrations and descriptions of special forms of apparatus making use of gaseous fuel produced. Among the articles of this kind shown may be mentioned a furnace for manufacturing solder, fire-pots for heating soldering irons, also automatic soldering machines. A section of workshop fitted with furnaces of the kind adapted for use in canning factories and tinware factories is also shown. Manufacturers of tin and sheet-iron ware, packers of fruits and meats, and managers of other establishments where quick, and extreme heat is required, either for soldering or cooking, are assured that a saving of at least 75 per cent. is attained by the use of this apparatus over coal or charcoal. Unfortunately for the interest which the general public and the critical mechanic might have in this pamphlet, it does not present a description of the apparatus by which these results are obtained, or a definition of the principles upon which it operates. It is confined to statements of what is done, comparisons with other fuels, and pictorial representations of different forms of apparatus in use.

The Long & Allstatter Company.

We have received from the Long & Allstatter Company, of Hamilton, Ohio, a new catalogue, recently issued, containing descriptions of shears and punching machines, and various specialties which they manufacture. The pamphlet consists of 64 pages, and is a little larger in size than an ordinary octavo. It has been carefully indexed, and is in all respects well adapted to the wants of those who are investigating the line of machinery which it describes. The opening chapter is devoted to some general particulars concerning the machines described. In it we notice the statement that the company have patterns, all of new construction, for over 350 sizes and styles of machines. The present catalogue has been prepared for the purpose of giving a comprehensive idea of each size and style manufactured. In this chapter also those purposing to purchase are urged to furnish the manufacturers with the fullest possible particulars of their requirements, in order that they may intelligently advise as to selection. There has been no attempt in the work before us to illustrate all the machines made, but, instead, types of classes have been presented in such a way as to make the reader familiar with all necessary points. We also notice the statement that each machine, before being shipped, is set up and practically tested on every variety of work which it is expected to perform in the shops for which it has been ordered. These tests are not mere matters of form, but are complete and thorough. The second and third chapters give particulars about the size, numbers and capacities of the machines illustrated, and a general description of the standard machines. Following this are particulars with reference to each of the general classes of machines illustrated, and descriptions of some of the special devices employed in them. A chapter is also given containing particulars about setting and running the machines. The first page of illustrations is devoted to the tools which are used with these machines, and which are named and described in detail, with particulars for adjustment and use. The illustrations throughout are excellent woodcuts, and give a very fair idea of the actual appearance of the machinery when in use. Each illustration is faced by a page of text giving a specification of the machine, with a table of widths, weights, sizes and capacities. The largest machine shown is number D, and weighs 56,000 pounds, while the smallest, No. 9, weighs only 625 pounds. The same general principles of design and construction underlie the entire series. The only differences between the various machines are in such modifications as are necessary for adapting them for the particular work for which they are intended. One of the special machines shown is an improved adjustable helve-cushion hammer, of which six sizes are made, varying in the weight of the machine, from 2000 pounds up to 8500 pounds. The hammers used vary from 20 pounds up to 100 pounds, and the speed at which the machines are run varies from 400 strokes per minute for the smallest size to 225 strokes per minute for the largest size. Four pages at the close of the book are de-

voted to the names and addresses of firms and individuals who are using the machines made by this company. About 500 names are given, and they come from every manufacturing section of the United States.

The Brown & Sharpe Manufacturing Company.

The new catalogue issued by the Brown & Sharpe Manufacturing Company, Providence, R. I., while perhaps lacking the attractive character of many other publications of this general nature, will be found to meet its purpose equally well, being in compact form, fully indexed, and containing numerous illustrations of the various appliances turned out by them. The different machines and tools represented in the catalogue are manufactured with the intention of having combined in each respectively all those qualities best adapted to serve the uses for which they are designed. Every machine is subjected to inspection in detail—and, when deemed requisite, of actual operation—before being shipped. For the convenience of those desiring to purchase their milling and grinding machines and other machine tools, the company have placed a line of samples of these tools at No. 14 Dey street, New York, with Mr. E. P. Bullard, who will act as their agent in this city.

The Ball Engine.

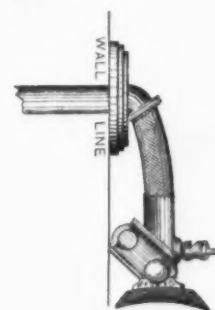
Mr. W. M. Allaire, 59 Liberty street, New York, agent for the Ball Engine Company, Erie, Pa., has lately sent us one of their 20-page catalogues, fully illustrated throughout with engravings of speed diagrams and different views of their engines, together with details. The descriptive parts will be found of interest, as giving an idea of the advantages claimed for the engine, and, together with tables of dimensions and price lists, furnish matter of some value to those contemplating the purchase of an engine.

The Korting Condenser.

A number of interesting tables enabling a ready calculation of the quantity of condensing water required per minute in cubic feet for the Korting condenser are submitted in a pamphlet recently issued by Mr. A. Aller, 109 Liberty street, New York. It contains, also, a price list and table of capacities, together with directions for connecting and operating the condenser. The condensing water tables, one of which was published in a recent issue of *Mechanics*, will be found exceedingly convenient and valuable, and those interested should, consequently, not fail to procure one of the catalogues.

Mouthpiece for Flexible Speaking-Tube.

Those who have occasion to employ speaking-tubes leading from a central office to various departments in an establishment frequently find it necessary, on the score of convenience, to employ flexible tubes for



Mouthpiece for Flexible Speaking-Tube.—
Fig. 1.—The Barlow Speaking-Tube.—
Mouthpiece at Rest.

terminals, especially when they occur near a desk. The flexible tubes are readily arranged in such a way as to make it possible to draw any one of them to the mouth of the speaker, and thus save the necessity of rising. Wherever such an arrangement of tubes is made, the question of the whistle and form of mouthpiece is an important consideration. The ordinary whistle which turns in the neck of the mouthpiece and is held in place by a spring answers very well, so far as sounding an alarm is concerned. The little indicator, however, usually accompanying this form of mouth-piece be-

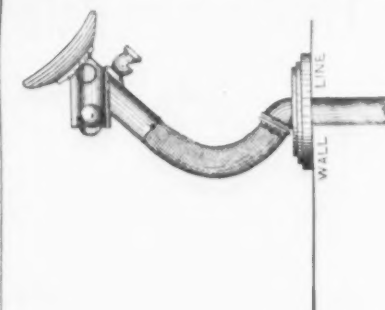


Fig. 2.—The Mouthpiece Raised for Use.

comes inoperative on account of the tube hanging down. Accordingly, there is a necessity of some different arrangement of parts in order to secure an automatic indicator. An objection to the ordinary whistle which turns up out of the way when the tube is to be used for speaking is the fact that both hands are required whenever the tube is used—one to hold the tube near the mouth, and the other to turn the whistle away. An automatic arrangement in combination with an indicator would, therefore, seem to be very desirable. The points to be gained are such an arrangement of parts as will indicate the tube through which the sound has come and which will be out of the way when the tube is lifted up, and which in

Paris, 1878.

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For Superiority.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

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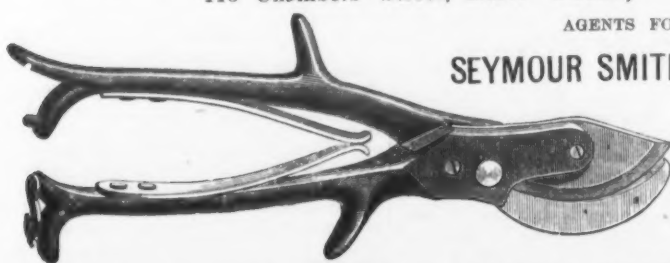
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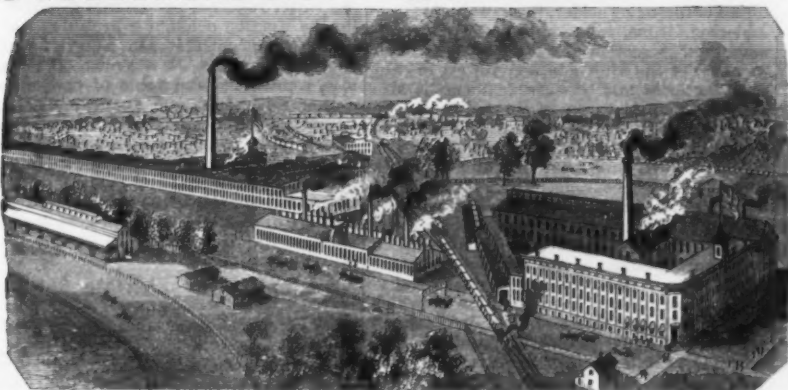
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WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marshes.

The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for exports as well as home trade, and it seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each of 50 pounds weight, suitable for shipping by land or water to any part of the world.

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Flat,
Flat Equaling,
Flat Wood,
Gang-Edger,
Ginsaw,
Gulleting,
Half-Round,
Half Round Wood,
Hand,
Hand Equaling,
Handsaw Blunt,
Handsaw (Double-End),
Handsaw Taper, single-cut,
Handsaw Taper, double-cut,
Handsaw Taper, slim,
High Back,
Hook-Tooth,
Knife,
Knife Blunt,
Lead Float,
Lightning,
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Mill,
Mill Blunt,
Mill Pointing,
Pillar,
Pitsaw,
Reaper,
Roller,
Round,
Round Blunt,
Slotting,
Slim Handsaw Taper,
Square,
Square Blunt,
Square Equaling Files,
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RASPS.

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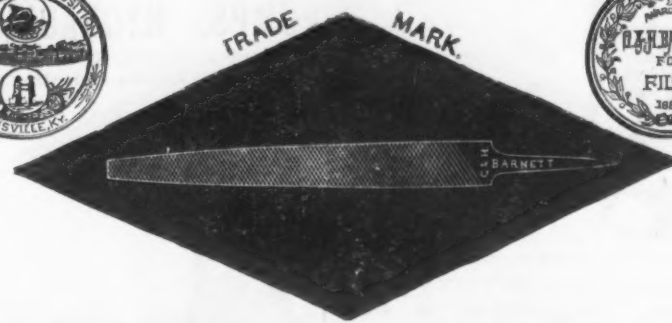
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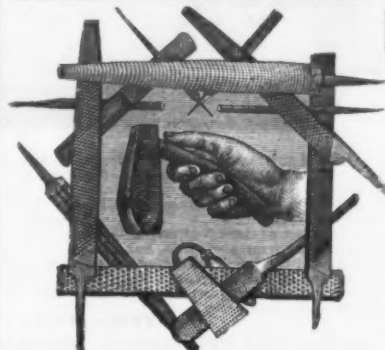
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Pamphlets showing sizes of grain sent free.

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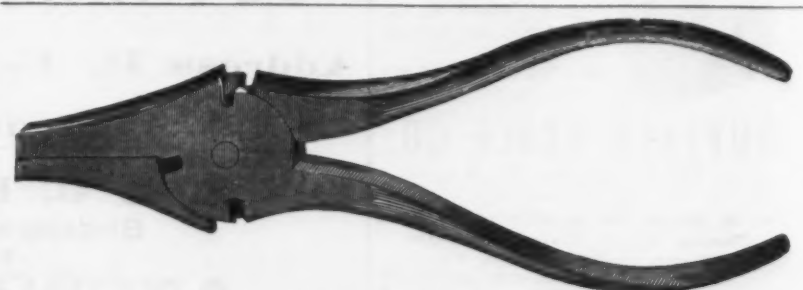
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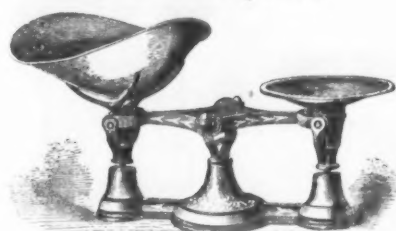
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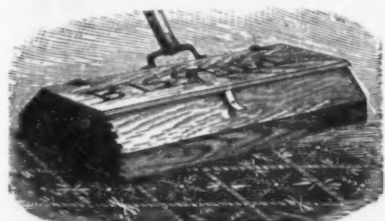
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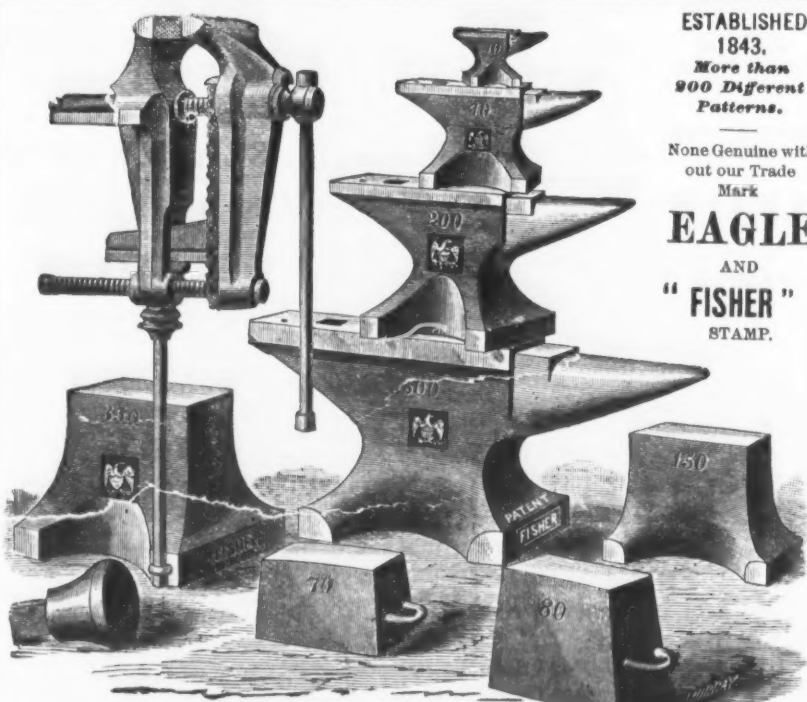
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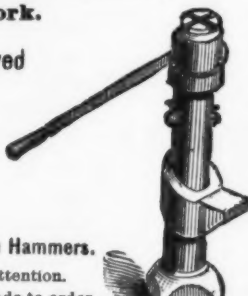
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turn will automatically restore themselves to proper position for another alarm the moment the tube is dropped.

In the accompanying engravings we show what is known as Barlow's patent speaking-tube fittings, manufactured by T. Barlow & Co., of Queen street, London, England, and which, so far as we can judge from the manufacturers' descriptions, meet in most respects the conditions which we have been describing. We are under the impression that there is nothing in our home market equally serviceable. We base this remark upon the fact that we investigated the supply very carefully a short time since in fitting up such an arrangement of speaking tubes as we have above described, and, much to our surprise, we found nothing that answered these requirements which was automatic in character. One speaking-tube fitter finally modified the spring whistle usually found in the common mouthpieces to work by gravity, and changed the hinge of the little flap which serves as an indicator in such a manner as to make these parts serve a fairly satisfactory purpose on a hanging flexible tube. However, we think the arrangement far less desirable for use than such a device as is shown in our engravings. The Barlow fitting, it is possible, may be in this market, but, if so, we have failed to find it after careful inquiry.

Referring to the engravings, Fig. 1 shows the position of the parts when at rest. The whistle is at the side. A ball, by the action of gravity, falls down and covers the orifice of the mouthpiece. Accordingly, by blowing into the opposite end of the tube the whistle is sounded. The arrangement of the parts in the whistle is such as to cause an indicator to be thrown out, as shown in the engraving. When the tube is raised to the mouth, in order to answer back, the parts take the position in Fig. 2, the ball drops back into the cavity at the side specially designed for it, thus opening the tube for the purposes of communication. At the same time the indicator in the whistle drops back into position, to be driven out again whenever the tube is blown into from the opposite end. From this it will be seen that this device is entirely automatic. The whistle does not require special handling to be used, nor does the indicator require putting back. It obviates two well-known objections to other speaking-tube fittings in use.

The Physical Condition of Iron and Steel.

The following extracts are taken from a paper on the "Physical Condition of Iron and Steel," read by Prof. D. E. Hughes at the British Institution of Mechanical Engineers, held on the 24th and 25th of January. After referring briefly to some previous papers of his on the same or similar subjects, describing results arrived at by the induction currents balance, Professor Hughes said:

Believing it necessary that we should be able to tell the physical state of any piece of iron without destroying or changing that state, the author has sought for and tried several methods which gave any hope of success in this direction. The physical state of iron has a marked influence upon its electrical conductivity. The differences thus indicated, however, are not wide enough to be appreciated except with metal in the form of wire; and in order to perceive small changes, such as small differences of temper, we should require a wire at least 250 yards in length. The author has found, however, that by the application of certain phenomena belonging to magnetism we are enabled to perceive clearly the slightest change in the molecular structure of iron or steel, through all degrees of annealing to the finest differences in tempering, and this with pieces of any form or dimensions. It is already known that soft iron will take a higher degree of magnetism and retain it less than steel, and that tempered steel retains magnetism more than soft steel. Consequently, we might expect that, by the aid of an instrument which could give correct measurements of degrees of magnetism, we should be able to include all varieties of iron and steel, between the two extremes of softness as in annealed iron and hardness as in highly-tempered cast steel. The author soon found that this was not the case when pieces of iron were magnetized to saturation, or even partially so. In a recent paper upon the theory of magnetism the author said: "During these researches I have remarked a peculiar property of magnetism, viz., that not only can the molecules be rotated through any degree of arc to its maximum or saturation, but that, while it requires a comparatively strong force to overcome its rigidity or resistance to rotation, it has a small field of its own through which it can move with excessive freedom, trembling, vibrating or rotating through small arcs with infinitely less force than would be required to rotate it permanently on either side." This property is so marked and general that we can observe it without any special iron or apparatus. The author has found, by employing extremely feeble magnetizing powers, such as a weak current of electricity only just sufficient for measurement (or the current from one Daniell cell reduced, as found best for the dimensions of the iron, by passing it through resistance coils varying from 10 to 100 ohms), that these laws hold with all kinds of iron and steel:

1. The magnetic capacity is directly proportional to the softness or molecular freedom. 2. The resistance to a feeble external magnetizing force is directly as the hardness, or molecular rigidity. The author has proved this to be the case with 60 different varieties of iron and steel furnished direct from the manufacturers. And he has found that each variety of iron or steel has fixed points, beyond which annealing cannot soften, nor tempering harden; consequently, if all varieties were equally and perfectly annealed, each variety would have its own magnetic capacity, or its specific degree of value, by means of which we could at once determine its place and quality. If in place of several varieties we take a single specimen, say hard-drawn Swedish iron wire, and note its magnetic capacity, we find that its value rises rapidly with each partial annealing, until an ultimate softness is obtained, being the limit of its molecular freedom. We are

thus enabled to study the best methods of annealing, and to find at once the degree of softness in an unknown specimen. Similarly, when we temper annealed iron and steel, we find that we can follow out each degree of temper up to molecular rigidity; and we may thus appreciate in an unknown specimen of unknown temper the degree of its hardness. We have thus in each piece of iron or steel a limit of softness or hardness. In soft Swedish iron, tempering hardens but 25 per cent. on the scale adopted, while mechanical compression, such as hammering, hardens it 50 per cent. In cast steel, tempering hardens it 400 per cent., while mechanical compression gives but 50 per cent. Between cast steel and Swedish iron we find a long series of mild steel, hard iron, &c., varying in their proportionate degree between the two extremes just mentioned. The theory which the author has advanced, of molecular freedom as in soft iron, and molecular rigidity as in cast steel, fully explains all the changes which we are enabled to perceive and measure; but it is not absolutely necessary to accept the theory in order to appreciate the results. For, leaving theoretical considerations aside, we have one proved fact, viz., that the magnetic power or capacity of a piece of iron, under the influence of an external limited magnetizing power, depends upon its softness; and that the retention of magnetism, when the external power is withdrawn, depends upon its hardness. The same degree of temper or annealing upon the same iron or steel gives invariably the same reading; but the slightest change, say, from a straw-colored temper to a blue, gives very wide differences.

Influence of Annealing upon the Molecular Structure of Iron and Steel.—The magnetic balance shows that annealing not only produces softness in iron, and consequent molecular freedom, but it entirely frees it from all strains previously introduced by drawing or hammering. Thus a bar of iron drawn or hammered has a peculiar structure, say a fibrous one, which gives a greater mechanical strength in one direction than another. This bar, if thoroughly annealed at high temperatures, becomes homogeneous in all directions, and has no longer even traces of previous strains, provided that there has been no actual mechanical separation into a distinct series of fibers.

TABLE I.—Influence of Annealing upon Swedish Iron, Sample G.

	Approximate temperature.	Degrees of softness indicated upon the magnetic balance.
Wire, hard-drawn, as furnished by makers.	Cent. 500°	230°
Annealed at black heat.	500°	255°
" dull red.	700°	280°
" bright red.	1,000°	330°
" yellow.	1,100°	340°
" white.	1,300°	325°

From Table I we see that a regular increase of softness occurs as the temperature at which Swedish iron is annealed increases, the maximum being at a point under that of fusion. The results of the author's researches may be thus formulated: 1. The highest degree of softness in any variety of iron or steel is that obtained by a rapid heating to the highest temperature less than fusion, followed by cooling in a medium incapable of changing its chemical composition. 2. The time required for gradual cooling varies directly as the amount of carbon in alloy. Thus in absolutely pure iron rapid cooling, as in tempering, would not harden it, while steel might require several hours or days, even for pieces only 1 mm. in diameter. Slow cooling has no injurious effect upon iron when cooled in a neutral field; consequently, where time is no object, we may employ slow cooling in every case. A wire or piece of iron thoroughly annealed must not be bent, stretched, hammered or filed; the hardening effect of a bend is most remarkable, and the mere cleaning of the surface by sandpaper hardens that surface by several degrees on the scale.

Tempering.—The influence of tempering upon the magnetic retentivity or molecular rigidity has been shown in every piece of iron or steel yet examined. Swedish iron hardens but 10 to 20 per cent. by tempering, while cast steel hardens 300 per cent., the molecular rigidity of tempered steel being 18 times greater than that of soft iron. The influence of different methods of tempering on crucible steel is shown in Table III., ranging from its ultimate molecular rigidity to its ultimate softness when annealed.

TABLE III.

Crucible fine cast steel tempered.	Mark.	Magnetic capacity.
Bright yellow heat, cooled completely in cold water.	A	28
Yellow red heat, cooled completely in cold water.	B	32
Bright yellow, let down in cold water to straw color.	C	33
Bright yellow, let down in cold water to blue color.	D	44
Bright yellow, cooled completely in oil.	E	51
Bright yellow, let down in water to white.	F	58
Red heat, cooled completely in water.	G	66
Red heat, cooled completely in oil.	H	72
Annealed.	J	84

Table IV gives the complete results of the mechanical, chemical and physical tests upon these wires. The tensile strength and electric conductivity are as furnished by Frederick Smith & Co., the chemical analyses are as given by Mr. Henry S. Bell, and the magnetic capacities of the bright hard-drawn wires, as of the annealed and tempered wires, were determined by the author with the aid of the magnetic balance. Table IV will aid us in drawing several conclusions. Taken in conjunction with Table III, it shows: 1. That the degree of temper in cast steel is dependent jointly on the heat to which it is raised and the degree by which this is lowered in rapid cooling, the extremes in Table III giving the relative molecular rigidity of the softest and hardest steel. 2. That a peculiar mild and homogeneous temper is obtained in oil. 3. That the tempers or degrees of hardness when steel is let down through the various colors vary with the kind of steel tempered, as well as with the heat from which it has been let down

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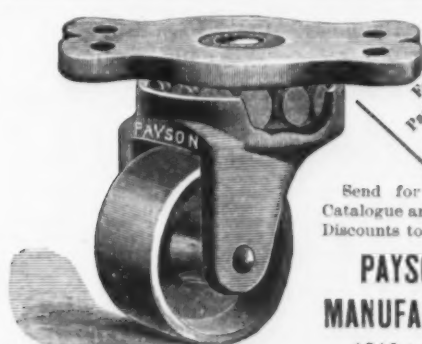
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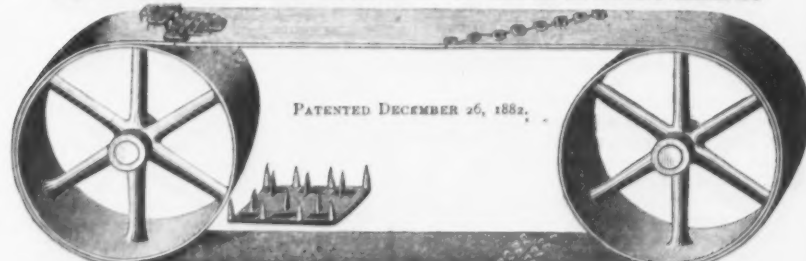
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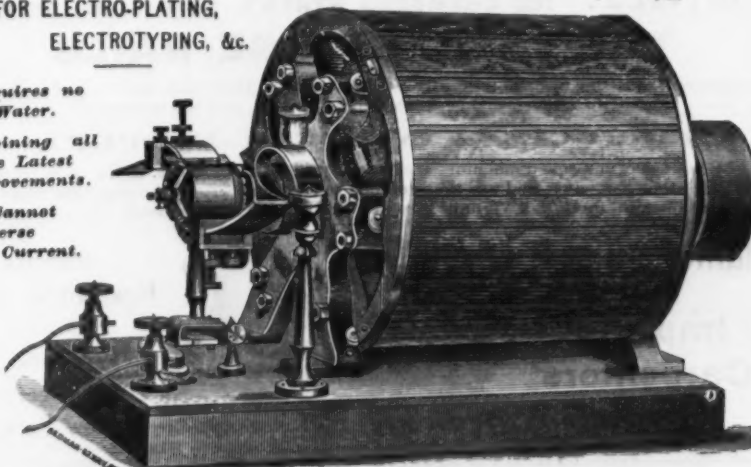
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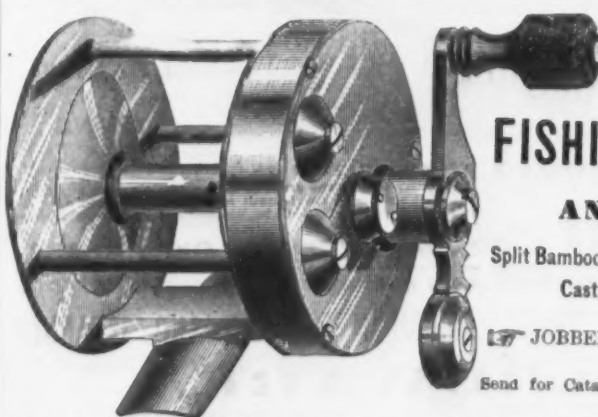
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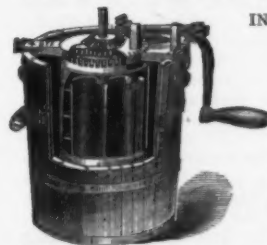
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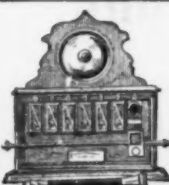
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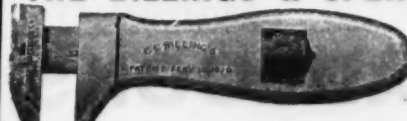
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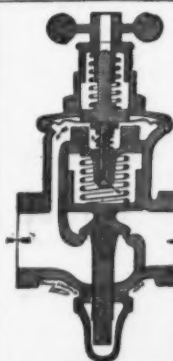
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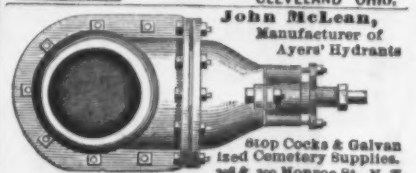
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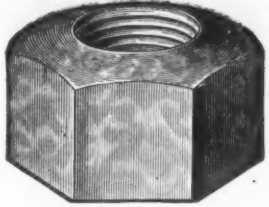
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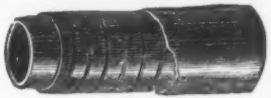


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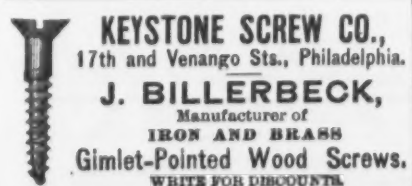
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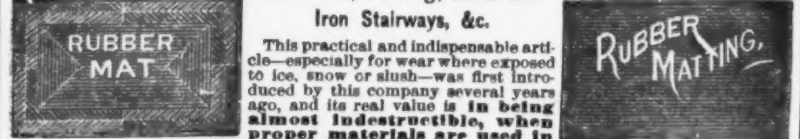
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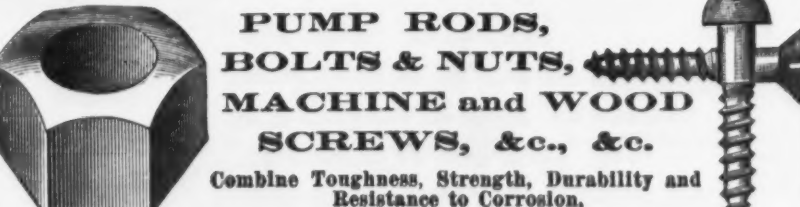
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HAMMERS,
FORGINGS and
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An Astonished Inspector.

The insurance companies, remarks the Milford Gazette, must have plenty of money. Every few weeks somebody comes in and looks over premises over, glances at the stove-pipes, smells the benzine bottle (sometimes with a disappointed face), and asks all sorts of questions. We do not grumble. We like to see people active, and are glad to discover that some people are impertinent besides newspaper reporters.

One of them called at the Gazette office the other day. He looked up stairs and down, and found no fault till, peering through a window from the composing room into the cellar, he discovered a small boiler surmounted by a steam gauge which registered a pressure of 115 pounds. He was evidently astonished, and inquired if we considered the boiler safe to use.

"Perfectly."

"You are running an unusual pressure. What is your safety-valve set on?"

"Don't know. Never examined."

"Has this boiler been tested recently?"

"Not that we know of."

"Do you always run that amount of pressure?"

"Usually."

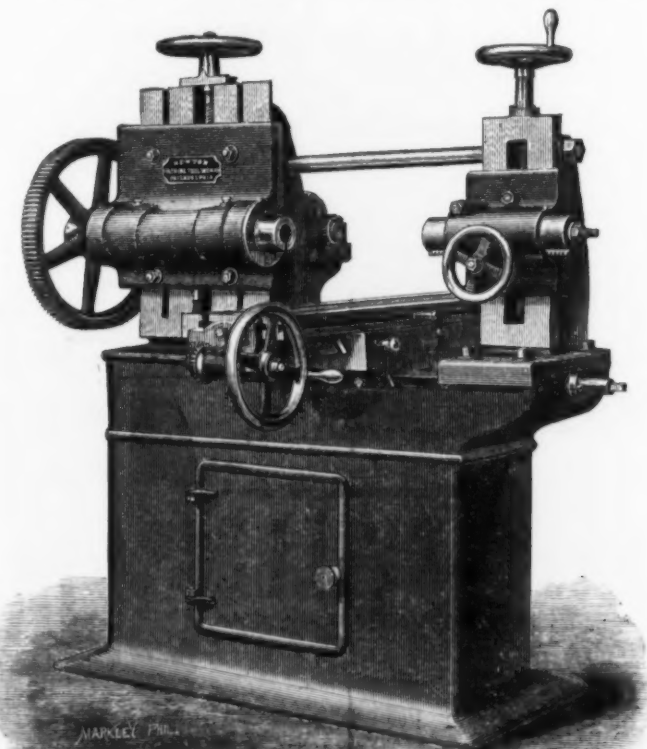
"You are running a great risk. Shall have to examine it at once. You are endangering the life of every person in the building. I must order you to reduce the pressure at once, and will see that the boiler is inspected."

We made no reply, but when that man examined the boiler and found that it was merely a shell which had not been fired up for half a dozen years, and that the "printer's devil" had fixed up the steam-gauge in his spare moments, while waiting for copy, he said naughty words, which so shocked us that we have turned the gauge around, and the only person who can look at it is the boy who comes in to guess at the gas meter.

The Gazette runs its presses by a water motor.

A New Milling Machine.

We illustrate in the accompanying engraving the No. 3 New Pattern milling machine built by the Newton Machine Tool Works,



NEW PATTERN MILLING MACHINE.

of 2341 Callowhill street, Philadelphia, Pa., and which has taken the place, to a large extent, of what is familiarly known as the "Lincoln" pattern, the adjustment being much more simple and accurate and the machine much heavier and stronger. No. 1 is intended for sewing-machine works and other establishments of a similar nature, and has a carriage 30 inches long, with a vertical adjustment of spindle of 10 inches above the carriage, the latter being 8 inches wide. No. 2 is intended for a heavier class of work—for milling brasses for stationary engines, cutting keyways and for electric-light works. The carriage is 34 inches long, 9 inches wide, and the spindle has a vertical adjustment of 11 inches from the carriage. No. 3, which we show in the cut, is used principally by railroad shops, locomotive works, and to a great extent by builders of stationary engines. The machines of this size are very convenient, and are claimed to save from 50 to 100 per cent. on planer or shaper work, in milling cross-heads, rod brasses, splining shafts and various other operations. The workmanship of these tools is of the highest order, and the distribution of metal most perfect. For those desiring to reduce the cost of their product they are of unquestionable value. They are heavy and well proportioned and fitted, and a cut can be taken at the rate of 1 1/2-inch feed per minute with a cutting speed of from 70 to 80 feet per minute.

The Miantonomah's Plates.—On March 20 Senator McPherson introduced a resolution into the United States Senate calling upon Secretary Chandler to furnish the Committee on Naval Affairs with the copies of the contract awarded for the furnishing of the sheet-armor plates and bolts for the turret and pilot-house of the double-turreted monitor Miantonomah. The Secretary sent the committee the copies a few days ago, and the committee now have them under consideration. The contracts were awarded on November 13 last to John Brown & Co. and Charles Cammell & Co., Sheffield, England. Immediately after, Nathaniel McKay, the shipbuilder, who claims to have been desig-

nated by Charles Cammell & Co. as their agents in New York, made a demand upon them for a commission of 4 per cent. upon the contract, which he assumed he was entitled to, but which they denied. Mr. McKay has made a report to the committee upon the subject, stating what he assumes to be his position. He criticises the awarding of the contracts, and asserts that the contractors are to receive at least 40 per cent. more than the materials will actually cost them to deliver. He says that when the facts come out they will be startling, but declines to give the nature of them in his report. Messrs. Wallace & Co., of New York, who acted as the representatives of the English firm in the negotiations, say they do not fear the most thorough investigation in regard to the contractors or the price promised, and that the plates will meet the fullest requirements.

Trials with a Dynamite Gun.

The first of the regular series of experiments with the new pneumatic dynamite gun which is to be carried on during the spring at Fort Hamilton, in the harbor of New York, took place on the 16th inst., under the direction of Col. John Hamilton and Lieut. E. L. Zalinski. The gun was manufactured at the Delamater Works expressly for these experiments, at a cost of \$5000. The guns could be manufactured in large numbers for about \$1000 each. The gun consists of a long tube 40 feet in length and 1/2 inch in thickness. It is connected with a large steel cylinder or flask, which is supplied with compressed air from the compressed air steam engine.

The target at which the shots were fired was situated, at a distance of 2100 yards, on the shore at Fort Wadsworth, the gun being placed on the glacis of Fort Hamilton. The first shot fired was one weighing 17 pounds, capable of carrying from 10 to 12 pounds of dynamite. It was loaded with the same weight of sand and lead, instead of dynamite. The pressure used was 485 pounds. The shot went 60 yards to the left and slightly above the target, exactly as Lieutenant Zalinski had foretold it would do, owing to the wind. The second shot, with a pressure of 480 pounds, went 10 yards to

the left of the target and 15 yards above it, burying itself completely in the hill. The third and last shot, which was sent in a blinding rain-storm, was a line shot, which went 25 yards short of the target and struck the water. "I am well satisfied with the experiments," said Lieutenant Zalinski. "While these dynamite guns can never supersede the ordinary powder guns, they will be a very valuable auxiliary, as they can be used equally advantageously on land or sea. The pressure used to-day—480 and 485 pounds—we shall increase to 2000 pounds as soon as another engine is supplied. The numerous attempts to throw dynamite with ordinary powder guns have nearly always met with disastrous results."

Long Steel Rails.—The Osnabrück Steel Works, Germany, have recently been manufacturing steel rails 58 feet 6 inches long, which have been laid down on railway bridges crossing the city of Hanover. It was found that the noise caused by passing trains was becoming such a nuisance that a remedy had become a necessity. The cause of it was the violent vibration at the rail joints, and the engineers hit upon the expedient of having rails made long enough to cover the whole length of the bridges. Since they were laid down the nuisance caused by the rail joints has ceased.

Diversified industries have had a great effect on the value set upon property in Chattanooga, Tenn. The papers there are quite enthusiastic over the sale for \$35,000 of a church property that was valueless except for its lot. Thirteen years ago, when it was presented to the church corporation, it was valued at \$1500, and ten years ago, according to the local papers, "would have been considered dear at \$2000." The iron and coal industries of Tennessee in and around Chattanooga are being rapidly developed, bringing with them a rapid growth of population and a demand for land and farm products that give the Southern city something of Western dash and enterprise.

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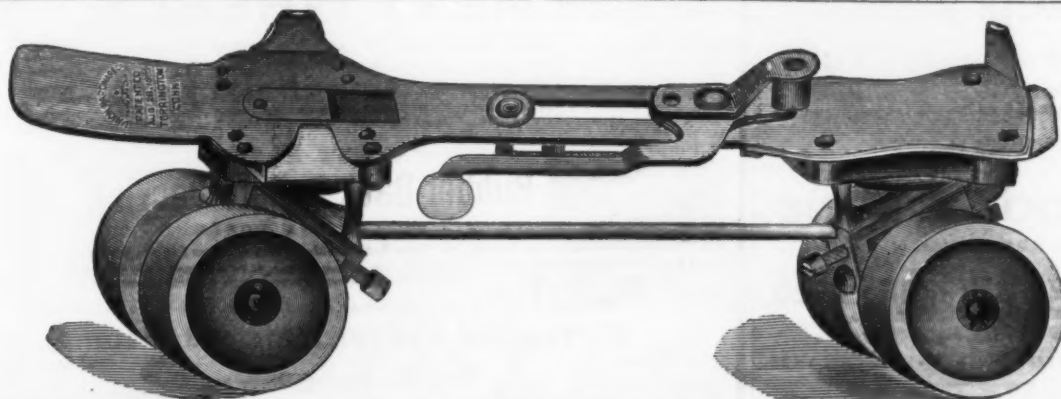
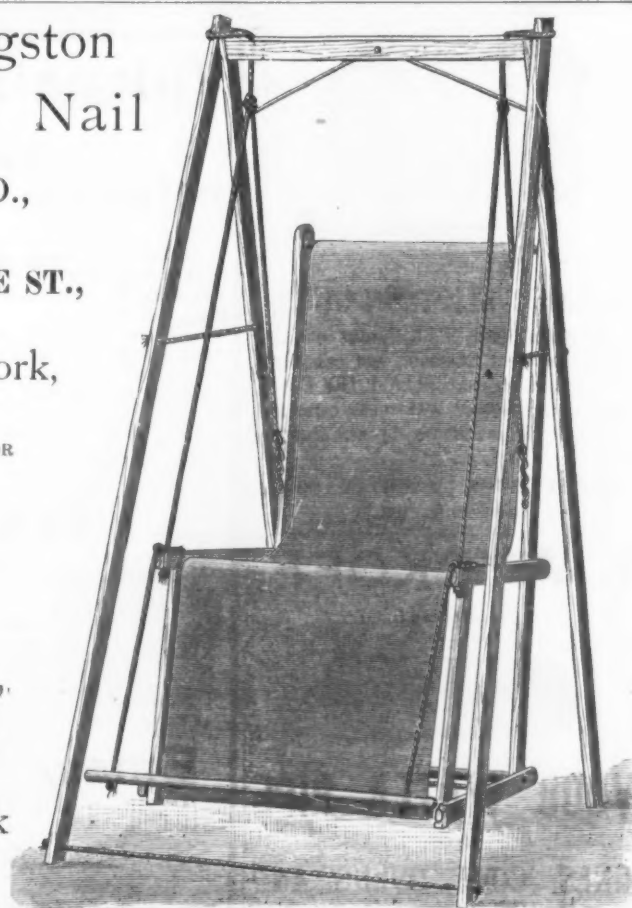
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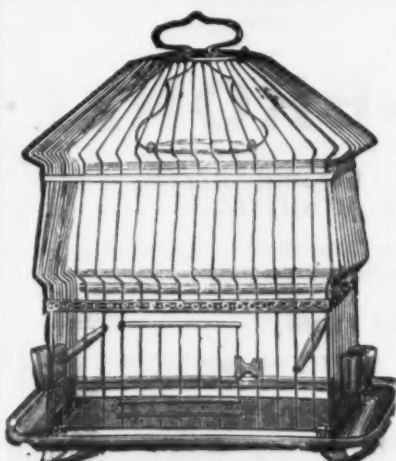
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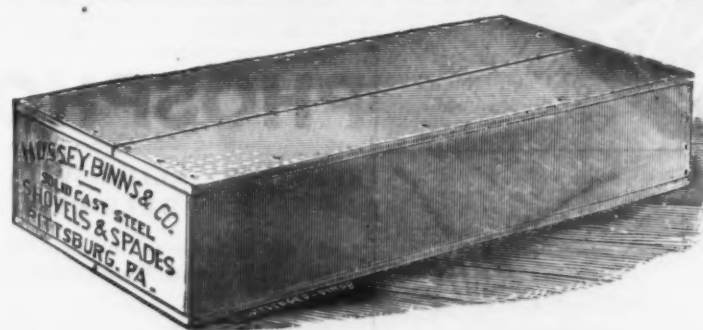
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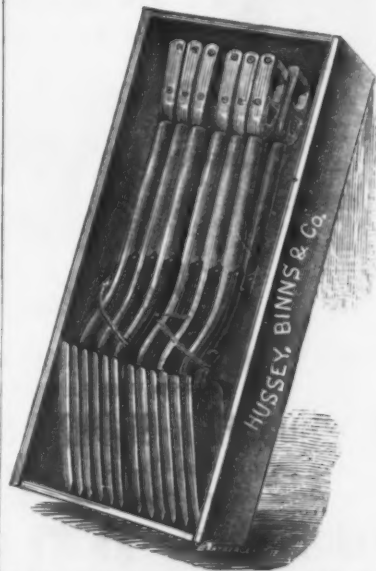
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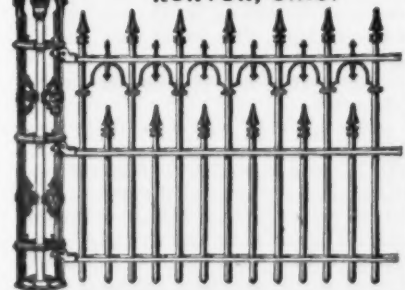
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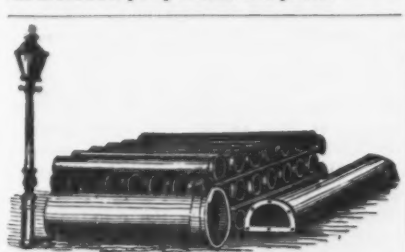
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A sold out his business and the good-will thereof to B, and made a contract with B not to go into the same business in the vicinity for three years, "under a penalty of \$100," but he violated this agreement and A got an injunction against him, which was afterward dissolved. An appeal was taken in the case—Stafford vs. Shortreed—to the Supreme Court of Iowa, where the judgment was affirmed. Judge Rothrock, in the opinion, said: "It is to be presumed that the plaintiff made his contract with a full knowledge of defendant's financial standing and ability to discharge his obligations. If he had doubts upon that question, he should have required some security to protect himself against any damages which he might sustain by reason of the defendant's failure to observe his agreement. All he can have is the ordinary process of the law to enforce payment; he cannot have an injunction to restrain the defendant from doing business. The amount the defendant agreed to pay is in the nature of liquidated damages; it cannot be regarded as a penalty, because the actual damages here must, in the nature of things, be subject of mere conjecture; they cannot be established by evidence even approximately."

FRAUDULENT CONVEYANCES—DEED RECORDED—STATUTE OF LIMITATIONS.

A creditor filed a bill in equity to set aside a voluntary deed to the debtor's wife as fraudulent as to him. The deed had been recorded for more than a sufficient time to bar the action by the statute of limitations, and the defense of the statute was pleaded. The trial court decided in favor of the plaintiff on the ground that the statute did not begin to run against him until he discovered the fraud. The defendant carried the case—Ward vs. Thomas—to the Court of Appeals of Kentucky, where this judgment was affirmed. The Chief-Justice (Hargis), in the opinion, said: "The recording of conveyances made in good faith and for a valuable consideration within the time prescribed by the registry, the laws, is notice to the world of their existence and recordable contents; but where the conveyance is voluntary its registration is not constructive notice of its existence or contents to a subsequent purchaser for a valuable consideration without actual notice. A pre-existing creditor stands in a better position than a purchaser; he has the right to rely upon the condition of his debtor when his debt was created, and he is not bound to keep constant watch over the public records for the voluntary conveyances his debtor may make, else be barred by limitations, regardless of the time of actual discovery of the conveyance or its equivalent."

TRADE-MARK—FALSE LABEL OR TRADE-MARK.

S, in Baltimore, sued A for infringing his trade-mark of "Angostura Bitters," alleging that A was imitating his trade-mark and labels in which he wrapped the bottles of his bitters, by putting up a compound, represented to have similar properties and virtues, in labels simulating those used by him. A showed upon the trial of the case—Siegert vs. Abbott—that the complainant's label had on it untruthful statements. The label was headed in three languages—Spanish, German and English—with these words: "Aromatic Bitters, or Angostura Bitters, prepared by Dr. Siegert at Angostura, now Port of Spain, Trinidad." It was proved that Dr. Siegert died in 1870, and that he never lived at Port of Spain, but that his successors, his sons, the complainants in this suit, moved to Port of Spain several years after his death. The court gave a decree which was not satisfactory to either of the parties, and both appealed to the Court of Appeals of Maryland, where the bill was dismissed because of the false statements in the label. Judge Irving, in the opinion, said: "The object of the trade-mark being to indicate by its meaning or association the origin or ownership of the article, it would seem that when a right to its use is transferred to others, either by the act of the original manufacturer or by operation of law, the fact of the transfer should be stated in connection with its use, otherwise a deception would be practiced upon the public, and the very fraud accomplished to prevent which courts of equity interfere to protect the exclusive right of the manufacturer. In this case there were substantial misrepresentations, and we cannot give the complainant any protection."

PARTNERSHIP—LETTERS PATENT AS ASSETS.

Two brothers were partners, and during their association one of them procured a patent and assigned it to the firm, who used it in their business. The inventor died, and in closing up the accounts refused to account for one-half of the profits of the patent, under the claim that the patent was not firm property, but that each of the firm was a half owner thereof. The personal representative claimed that the patent was a firm asset, and that the surviving partner should account for all gains, even those acquired after the dissolution of the firm. In this case—Freeman, administratrix, vs. Freeman—the Supreme Judicial Court of Massachusetts decided in favor of the administratrix. Judge Charles Allen, in the opinion, said: "Letters patent belonging to a firm are to be dealt with, on a dissolution of the firm, like other partnership property. That which was partnership property before the dissolution continued to be so afterward, and a sale of the whole personal property will ordinarily be enforced by a court of equity, and an account ordered of profits made since the dissolution. The surviving partner is not allowed to divide this property in specie, or to take it himself at a valuation, or to have its value ascertained otherwise than by a sale, but he must turn all the assets into an available or distributable form, so far as this can be done."

SALE—DELIVERY—PRICE NOT FIXED.

Goods were delivered to A by B under a negotiation of sale, and B said to A when the goods were taken, "Now the goods are yours." A exercised ownership over the property, selling them in his store in the usual way of business on the day after he received them. The prices were not fixed at the delivery of the goods; they were to be determined by a valuation next day; but

this was not done, as the goods were taken under attachment as the property of B. A had given B his notes for \$2750 upon an estimate of the goods. In the suit to determine the title to the goods—Shenly vs. Edwards—the trial court decided against A; but on an appeal to the Supreme Court of Alabama the judgment was reversed. Judge Somerville, in the opinion, said: "If goods are sufficiently identified, a complete sale of them may be made without fixing an absolute price, if such be the clear intention of the parties, as legally evidenced by the circumstances attending the sale. This would seem a reasonable rule according to the principles of analogy adopted in all cases. In the construction of contracts generally it is a first and pervading principle that the intention of the parties must govern, unless that intention contravenes some established principle of law. The same rule is equally dominant in construing wills. We deem it of paramount importance in construing contracts of sale—a subject which is still in much confusion, notwithstanding the vast resources of learning expended upon it by the jurists and law writers of the past century. In this case there was clearly a sale, and A was the owner."

GOOD-WILL—PROFITS OF TRADE.

The good-will connected with the establishment of any particular trade or occupation may be the subject of barter and sale. It is a valuable right, and, if it be unlawfully destroyed or taken away, the law will award compensation to the injured party. It is defined to be "the advantage or benefit which is acquired by an establishment beyond the mere value of the capital, stocks, funds or property employed therein, in consequence of the general public patronage and encouragement which it receives from constant or habitual customers, on account of its local position or common liability, or reputation for skill, affluence, or punctuality, or from other accidental circumstances or necessities, or even from ancient partialities or prejudice." It is claimed here that the plaintiff is seeking to recover for his loss of profits in trade, and not for the injury to his good-will. But the attachment complained of drove his customers away, and he lost his trade. Now, it is plain that if by any means customers are driven from a particular locality to which they resort to trade, that trade loses that which we have described as good-will. The distinction between profits and good-will is obvious—profits are gains realized from trade; good-will is that which brings trade. A favorable location of a mercantile establishment, or habit of customers to resort to a particular place, will bring trade. This advantage may be designated by the term "good-will;" what the trader gains from the trade so acquired are profits.—Carey vs. Garrison, in the Supreme Court of Iowa, by Judge Beck.

REMITTANCE—FAILURE OF BANK.

Salvage earned was remitted to New York from New Orleans by direction of those entitled to it, but before the draft reached its destination the bankers whose draft was sent failed. The standing of the house was unquestioned when the draft was bought. The salvors sued to recover the amount due them, and the defense was made of payment. In this case—Underwriters' Wrecking Company vs. Board of Underwriters—the plaintiff recovered a judgment, but on an appeal to the Supreme Court of Louisiana the judgment was reversed. Judge Manning, in the opinion, said: "The salvage was due at New Orleans, where the cargo was sent for sale. So far from demanding payment in New Orleans, the plaintiff instructed the defendant to remit, and if in remitting the defendant observed the same care, diligence and good judgment as in its own business, and the remittance is made in the customary manner, it was at the risk of plaintiffs. The defendants' faith in the solvency of the bankers was complete, and by their failure they lost a large sum on deposit with them. The crash came two days after the purchase of the draft for the plaintiffs. The remittance was made under instructions, without indicating any particular mode of remittance. It was much in the usual mode, and with the same care and diligence that a prudent man exercises in his own affairs. No more can be expected or is required of the debtor, and, having done that much, the defendant is discharged from all further care or responsibility."

Famous Bronze Doors.—Among the monumental works in bronze which emanated from Constantinople some of the most remarkable are the bronze doors which decorated several of the Italian churches, more particularly those which are enriched with inlays of silver. The church of San Marco possesses one brought from Constantinople, and which originally adorned the church of Santa Sophia, and like the bronze horses, was brought to Venice as spoils of war in 1204. Other doors worthy of mention are those at Amalfi, in the Duomo, San Salvatore di Bireto, Atrani, the Benedictine Church at Monte Cassino, and the church at Monte Santangelo—the last four examples were all the gift of one family, the Pantaleoni of Amalfi. Those of San Salvatore, Atrani, were given by Pantaleone Viaretti in 1807, "pro mercede anime sue et merita S. Sebastiani, martyris." At Amalfi, in the cathedral of San Andrew, it is Pantaleone di Mauro who gives them, in honor of the Apostle, and for the repose of his own soul. At Monte Cassino another member of the same family gives the bronze doors, and these are enriched with silver letters, containing an account of all the possessions of this magnificently-endowed Benedictine abbey—the head house of the order. They date from 1066. At Monte Santangelo the Pantaleoni again are the generous donors of the bronze doors there. In the Duomo at Salerno are fine bronze doors, once containing silver inlays, given by Landolpho Butromile and his wife, 1099. The design consists of crosses and figures of six of the Apostles. The similarity of the five examples all point to a common origin; the same stiff Byzantine treatment of the figures and heads, which are shown by incising lines into the bronze and filling them with silver. These were evidently done to order at Constantinople, and are ascribed to a Greek workman, Staurachios—Romanized into Staurontius—who flourished about 1050-1072.

The Iron Age

AND
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The Labor Conference at Pittsburgh.

The first conference between committees
of the Western iron manufacturers and the
Amalgamated Association, regarding wages
for the ensuing year, was held in Pittsburgh
last Saturday. The demand of the work-
men was for the old scale, with certain ad-
ditions, which are as follows:

All branches of labor belonging to the Amalgam-
ated Association, whether paid by the company
or not, and not governed by scales, shall rise
and fall in the same proportion to those branches
which are mentioned in the scale.

In the conditions for boiling strike out the words
"\$1 per ton extra for axle railroad-axle iron."
The price for puddling, Silgo special or United
States iron, shall be price and one-half the price
of that paid for boiling iron.

In muck rolling add: "This scale applies to
muck trains with two sets of rolls or less. On
trains with three or more sets of rolls the extra
hands required thereon shall be paid by the com-
pany, the Birmingham (England) coin gauge to be
taken as the ruling standard weight in the sheet
and wire mills. When sheets are lighter than the
gauge they represent, the next higher or lighter
gauge to be taken for the rolling price. For steel
sheets rolled on iron-sheet mills the price shall be
20 per cent. above common iron prices."

In knobbling add: "Price for knobbling raw
pig iron in the scale; the price to be \$2 per ton
above the price paid for working refined iron,
which will be \$8.11 per ton on a 25-10 card, run-
ning up to \$12.25 per ton on present scale, on 6-
cent card."

Heretofore there has been no scale in-
serted for the nailers, and they propose the
following, which has been the customary
rate for several years:

1½ clout.....\$1.25
¾ lining, fine.....3.30
¾ finishing.....5.47
Third casing and box.....1.05
Third lead heads.....1.90
¾ cooper tacks.....5.71

The price for making steel nails when it is harder
than iron shall be 20 per cent. above the price paid
for cutting iron nails. Also, when nails are made
lighter than the specified sizes in the scale, the
price shall be advanced in proportion.

The manufacturers refused the demand,
and in turn insisted upon the old scale, with a
reduction of 10 per cent. This was refused by
the workmen, and the conference adjourned
without date. This does not, however, pre-
clude further negotiations, but is rather one
method of expressing the determination of
both sides to adhere, for a while at least, to
the demands made. Whether a strike or
lockout will result cannot be predicted until
the temper of both parties is more fully
known, nor until the time of finally settling

the question of signing or not signing the
scale approaches. The chief point at issue
is whether the present scale shall remain in
force or whether there shall be a reduction of
10 per cent. It is understood that the manu-
facturers justify their demand for a reduction
not only on the ground that the condition of
trade justifies them in asking it, and, indeed,
makes it a necessity if they are to continue
in operation, but also that it will be better
for the men themselves, and will enable
them to earn more money through increased
work than they will earn if the old rates are
continued. The increased competition of
steel, which has become more marked the
past year and promises to increase greatly
the ensuing year, was also urged, as were
the reductions that have been made in wages
in steel-making. The lower wages East and
the recent reductions there were also given
as reasons why reductions should be made
West. The workmen claimed that reduc-
tions in wages would not benefit the manu-
facturers; that the trouble grew out of the
fact that they were not true to each other,
but cut prices, and that a reduction in wages
now would only result in further cutting,
and after a little the same arguments would
be used to secure a still further reduction of
wages. It was also claimed that, at some
points in the East, Western iron was being
sold as low as it could be made East, even
with the lower rates of wages ruling there.

There is evidently a good deal of force in
the positions assumed by both the parties to
this controversy. It certainly needs no ar-
gument to show that when iron is selling at
1.7 cents to 1.8 cents wages should not be as
high as when selling at 2.5 cents. If the the-
ory of the sliding scale is correct, and wages
should go up and down as the selling price ad-
vances or declines, the demand for a reduc-
tion is a most equitable one. It would also
seem to need no argument to show that, if the
work is no more difficult, the Western manu-
facturers are entitled to have their work done
at as low wages as it is done East; but there
is also force in the question of the workmen.
What good would it do? "Should we re-
duce," they say, "the reduction will all be
"given away at once, and the manufacturer,
"to force sales, will cut the price an amount
"fully equal to the reduction." Under the
present condition of trade this would un-
doubtedly be the result. The chief benefit
of the reduction would be to stimulate trade
and enable the low sections to compete on a
more favorable basis, and perhaps secure a
larger share of the trade to the Western
mills. Should it do so, the men would have
more work and earn a larger amount of
money in a given time. But in the end
wages must come down. The law of supply
and demand must work in labor as well as
in trade, and if there are more men to work
than work to be done, labor must take less.

The demands of the men as expressed in
the additions to the scale are of some im-
portance. Some of them are most radical
changes, the result of which it is impossible
to foresee. The first is that the wages of all
classes of labor included in the membership
of the association not now regulated by a
scale shall hereafter advance or decline
with the scale. This is an exceedingly im-
portant change, and one the effect of which
no one can estimate. It certainly will intro-
duce many new elements of discord, and, as
these classes are paid very different rates
at the several mills, it must result in the
formulation of scales for each class.

The steel question also crops out in con-
nection with the sheet and nail amendments.
The large increase already in the production
of steel sheets, and the prospective increase
in the make of steel nails in the near future,
lead to the reopening of a question that has
been a serious point of discussion for several
years past, and which it was supposed had
been settled. The rule has been that when
the output of steel is as great as of iron,
iron prices shall be paid. It is uncertain
just what these clauses mean. One thing is
clear, however; if the Amalgamated Asso-
ciation intend to ask 20 per cent. extra for
cutting steel nails, they have a contest before
them of a serious character.

On the opposite page we print a letter on
the subject of railroad car axles, which is
deserving of attention, not only from axle
manufacturers, but also from the general
public. Appreciating the grave consequences
which must ensue from a continuance of the
present abnormally low prices of axles, a
meeting of the foremasters of the United
States was held in Cleveland on the 3d inst.
to devise some means for advancing the
price of axles to a remunerative figure. The
resolutions adopted at this preliminary meet-
ing did not propose any definite plan of
action, but simply stated the existing evils
and called upon the car-axle manufacturers
to join the association for mutual benefit
and protection. The next meeting of this
association is to be held at Buffalo on May 6,
at which it is hoped that all the forges will
be represented, and that some decisive
action may be taken to advance the price of
axles and provide against a recurrence of
such ruinously low prices in the future. It
is a fact which needs no argument that,
when prices fall so low as not to pay the
cost of an article, the article is sure to de-
teriorate in quality until its value approxi-
mates to its price. For this reason it is to
be hoped that the convention to be held in
Buffalo next month will accomplish its pur-
pose, as both life and property are too much
dependent upon the reliability of railroad car
axles to allow of inferior iron being used in
their construction.

Southern Pig Iron for \$12.50.

The statement is reiterated with much
positiveness and directness that a contract
has actually been made in the South for the
delivery of 70 tons of pig iron daily for 10
years at \$12.50 per ton. The parties are
Mr. H. F. De Bardeleben, who proposes to
manufacture the pig iron, and the Phillips &
Burtoff Manufacturing Company, who desire
to convert it into castings of various sorts.
Of the pig iron, 20 tons are to be delivered
daily at Nashville, Tenn., where the pur-
chasers have a foundry, and 50 tons daily at
Elyton, Ala., where the erection of a foundry
is contemplated by the same parties. It is
stated that Mr. De Bardeleben intends to
erect a furnace at Elyton, to have 100 tons
daily capacity. From this, and from the
statement that the Nashville foundry is to
be enlarged to a daily capacity of 20 tons, it
would seem that the contract is one which
does not begin immediately, but will have to
wait for its fulfillment for several rather
important matters, namely: the erection of
a furnace at Elyton, the enlargement of a
foundry at Nashville.

A Western contemporary throws a little
side light on this matter by stating that Mr.
De Bardeleben owns some thousands of acres
of land at Elyton, which he acquired for a
comparatively small sum, and he now pro-
poses to build a new city there. A blast
furnace will be a very good nucleus for
manufactures, and a large foundry will help
the project along amazingly. Quite a future
exists in some parts of the South, particu-
larly in Northern Alabama, over projects to
build new cities, and the Elyton contract
seems to be part of such a scheme. The
iron is to be delivered at Elyton at \$12.50
per ton, and it is suspected that the pur-
chasers themselves pay the freight to Nash-
ville on the pig iron which they have agreed
to receive there. Even if \$12.50 merely
covers the bare cost of producing the pig
iron, the "new city" scheme carries with it
an immense profit to the owner of the acres
which will be utilized as town lots. The
promoters of the city of Birmingham, Ala.,
could attest to the enormous profit to be de-
rived from a successful venture of this
character.

As a shrewd, sagacious and far-sighted
business man, Mr. De Bardeleben is to be
complimented on his enterprise in attracting
capital to Northern Alabama, and causing
manufacturing towns to spring up in that
richly-favored but long-neglected country,
and he deserves a good return for the bene-
fits he confers upon a part of the United
States, which has too long been in need of
enterprising men like himself. But there is
no necessity and no justification for the
prophetic warnings now coming up by way
of the State of Kentucky that a new order
of things has come upon us and an industrial
revolution is impending. We are of the
opinion that the price of pig iron will be
much lower in this country in the years to
come than it is now, and we believe that the
South is destined to become more of an ele-
ment in supplying the iron wants of the
country than she is to-day; but when the
cheap pig iron dawns upon us the North will
continue in the business at the old stand,
though Northern workmen will not then be
so well paid as they are now.

There are furnaces in the North that are
exceptionally well located which could make
as good a showing if they chose to do so as
any of the new Southern furnaces, but they
are few in both sections, and the average
furnaces are the ones to be considered in
comparing the merits of respective localities.
We have no special interest in the blast fur-
naces of Pennsylvania, New Jersey or New
York. We are proud to say that we repre-
sent no special section. Our patrons are
found in every nook and corner of this
country, as well as in numerous localities
outside of it. We give credit to every en-
terprise of merit, whether it is founded in
Maine, or Georgia, or Alabama, or Texas, or
California, or Pennsylvania. We glory in
the industrial growth of this whole country,
and we hope to see the day when manu-
factures will be properly developed in every
section, each locality pursuing the vocations
for which its inhabitants and climate and
resources are best fitted, and all working to-
gether for the best interests of themselves,
their fellow-citizens and their common
country.

Taxing Commercial Travelers.

We boast of the freedom of trade through-
out the United States. Whatever our foreign
policy may be, we seek to make domestic
commerce as free from restrictions as possi-
ble. The objectionable *octroi*, so common in
European cities, is not charged on any goods
sent to an American city for sale. No State
has the power to levy duties on any mer-
chandise imported into it from a sister State.
The goods manufactured in the State of New
York can be sent anywhere in the United
States without any additional charge being
imposed by the local government at the
point of delivery. A merchant who transacts
a national business has, therefore, no other
elements to consider in placing his goods
than his own and his competitors' prices and
freight rates, whether he sends his wares to
Maine, to Alabama, to California or to any
other State within this broad Union.

Sales are very largely made by sample,
however, and immense numbers of commer-
cial travelers are employed by merchants
and manufacturers to extend their business.

These travelers find that internal trade is
not so free from restrictions as the Constitu-
tion of the United States seems to make it.
In a considerable number of States the local
merchants have inspired the enactment of
laws requiring licenses to be taken out by
persons from other States desiring to sell
goods by sample, which licenses are held at
such a high rate that they form a heavy tax
on the business which is sought to be done.
In very many instances this tax effectually
bars the State from visits by the representa-
tives of outside merchants. While local
jobbers thus secure their home trade to a
considerable extent from the inroads of
active competitors residing in other States,
they at the same time enjoy the opportunity
of sending their own commercial travelers
into many States where no such restrictions
are imposed upon trade. The business of
this country has now grown to such propor-
tions, and our railroad facilities are so ample,
that a great deal of annoyance is experienced
by merchants and manufacturers whose
travelers very frequently find themselves
called upon to pay a heavy fine for violating
State laws of the character referred to.

So important is the question that the Com-
mittee on Manufactures of the National
House of Representatives have had under
consideration measures to put a summary
stop to the practice of taxing commercial
travelers, and have reported in favor of the
bill introduced by Hon. J. H. Brewer, of
Trenton, N. J., which provides that any cor-
poration or officer of a State or municipal
Government interfering with commercial
travelers should be deemed guilty of a mis-
demeanor, and be liable to indictment before
a United States Grand Jury in the district in
which the interference occurred, and, upon
conviction, to pay not exceeding \$100 fine or
be imprisoned three months, or both. The
committee declare in their report that the
States imposing these taxes are guilty of in-
fringing the Constitution of the United
States, as the laws under which the taxes
are levied have been pronounced unconsti-
tutional by the Supreme Court, yet they con-
tinue to enforce their fines, penalties and
taxes, relying upon the belief that the trouble
and costs of redress through the courts will
protect them from the law. As these cases,
when carried to the Supreme Court, take
three years of time and at least \$1000 in
money to defend, it can be seen at once why
business houses submit to the imposition.

The purpose of these tax laws appears
plainly to be, not the raising of revenue, but
the securing of a special advantage to local
jobbers, and they are therefore, in the judg-
ment of the committee, inimical to the best
interests of the consumers and the masses of
these various localities. Congressional ac-
tion seems to be absolutely necessary, and
the bill of Mr. Brewer is a step in the right
direction, in order that the commerce be-
tween the States may not be restricted and
the citizens of the several States debarred
from the freedom guaranteed them by the
Constitution. Every enterprising wholesale
house and manufacturing establishment in
the United States, along with 200,000 com-
mercial travelers, pray for the relief af-
forded in this bill and for its passage at this
session of Congress.

Our Foreign Wheat Market.

Some remarks which we made in last week's
issue concerning our foreign wheat market
have commended themselves to the favor of
Hon. Wm. D. Kelley, who has written us an
approving letter. The Father of the House
long ago foresaw the inevitable competition
this country would meet in supplying West-
ern Europe with wheat, and has, therefore,
labored diligently for a diversification of our
agricultural pursuits. In 1867 he delivered
a number of addresses in the West on this
subject, and specially urged the production
of sugar. At that time he believed that
beet-root sugar might be produced here, but
he has since learned to doubt whether our
soil is not too fresh and too rich in alkali
to yield beets from which the saccharine
matter can be extracted at a cost that
will permit the production of a commercial
sugar. In the meanwhile, however, events
have demonstrated the possibility of supply-
ing the country with sugar from corn and
sorghum, and the Judge says it has been
more than demonstrated that in those por-
tions of our country in which the seeds of
sorghum would ripen they alone would pay
for its production, leaving the sugar, syrup,
fodder and bagasse as profit. He highly re-
commends, as a valuable contribution to this
subject, the recently-published work of Peter
Collier, late chemist to the Department of Ag-
riculture. The Judge believes that we can
produce all the sugar we need, and thus
secure a new field for \$100,000,000 worth of
agricultural productions. He also heartily
favors the removal of the internal revenue
tax on whisky, in order to secure cheap
alcohol for the arts, which tax really
amounts to a direct levy on corn—an ag-
ricultural product. Highly-taxed alcohol
prevents many American products from en-
tering foreign markets. With alcohol free
of internal revenue tax we could enter the
markets of the world with alcoholic drugs
and perfumery. In many other directions
than those briefly referred to our agricul-
ture could be properly diversified and pro-
fitably encouraged. There is a vast deal of
work to be accomplished, both in the direc-
tion of agriculture and of manufactures
before this country possesses a harmonious,
symmetrical and perfectly developed indus-

trial system, and it should be the aim of our
legislators rather to seek for the defects in
that system, and cure them, than to prune
those branches which have only fairly begun
to grow.

The American Express Steamship Company.

On Thursday last Hon. John J. Adams, of
this State, introduced a bill in the House of
Representatives, authorizing "the registra-
tion of certain steamships as vessels of the
"United States." From the text of the bill
it appears that a number of citizens of the
United States, some of whose names are
given in the bill, propose to organize a steam-
ship company, for the purpose of operating
a line of at least five steamships for the
carriage of passengers and mails exclusively
between New York or some port on Long
Island and a suitable port in Great Britain.
The promoters of the company propose to
land Transatlantic mails at the New York
post-office in 6 days and 3 hours, which will
effect quite a saving in time as compared
with the time now required, which is about
8 days and 7 hours. To accomplish this, the
mails will be transferred from the steam-
ships to the railroad at Montauk Bay, Long
Island, and the steamships themselves are to
have a speed of at least 18 knots an hour, to
insure quick transit across the ocean.

It is claimed that it is necessary to ask for
the registry of foreign vessels in order to
carry out the designs of the company, as
vessels of the speed and capacity required
cannot be built here. This is a very good
reason for the application to Congress, if it
is true. We have several very good ship-
yards which turn out highly creditable
iron and steel steamships, but we do not
suppose that any vessels they have con-
structed even approximate the magnitude
and speed of the proposed steamships of the
American Express Steamship Company.
Possibly the requirements of the company
may tax the skill and resources of the more
experienced shipbuilders on the other side of
the Atlantic. We can readily comprehend
why, in an undertaking of this character
the projectors should feel like employing the
utmost skill, talent and experience available,
rather than to undertake costly experiments,
which might result in the loss of their entire
capital if the vessels proved to be of no ex-
traordinary speed and were obliged to come
down to the dead level of competition for
ordinary business with the numerous exist-
ing Transatlantic lines. An investment of
\$10,000,000 to \$20,000,000 is too serious a
matter.

We intend no reflection on American
shipbuilders when we make an unfavorable
comparison of their skill and experience with
their rivals in Great Britain. We acknowl-
edge the enterprise, ingenuity and persever-
ance of those of our countrymen who have
for years steadily persisted in endeavoring
to build up an American iron and steel ship-
building industry. The vessels they have
built are worthy of an honorable place in the
merchant marine of any country. But it is
the misfortune of our shipbuilders, and not
their fault, that they have had no experience
in the construction of such monsters of the
deep as now form the principal vessels of the
lines which connect this port with Europe.
The Government of the United States is
justly blameable for this state of affairs. If
the onerous regulations, restrictions and
charges of all kinds had been removed from
our shipping long ago, we have no doubt
that by this time American vessels would
have been numerous on the ocean, and
American shipbuilders would have had all
the experience required to enable them to
turn out anything needed in the line of naval
architecture.

Assuming that the application to Congress
of the American Express Steamship Com-
pany is made in good faith, that it is only
intended in the interest of the organization
referred to, and that the passage of the de-
sired bill is not to be regarded as a wedge
to open the way for the introduction and
passage of bills for the registration of all
sorts of ordinary steamships, which we
know can be built here, the project does not
seem to be specially objectionable. It is, of
course, humiliating to think that these ex-
pensive vessels will not be built in this
country, and that their construction abroad
will put taller feathers in the caps of our great-
est industrial rivals; but, on the other hand,
the carrying trade of the Atlantic should be
at least partly under our control. It is pa-
tent that the usual type of ocean steamer
cannot now make any profit, as some of the
most progressive British steamship com-
panies are passing their dividends, and to
be successful a new enterprise must
present such points of novelty and ex-
cellence as will attract the most profit-
able kind of business, and this seems
to be the aim of the new American
company. To carry out their plans they
are obliged to go outside the country for
vessels that will, without risk of failure,
come up to the high standard required. We
sincerely hope that Congress will speedily
act on the various bills before it for the relief
of the shipping interest, so that our com-
merce will be delivered from the fetters of
those antiquated restrictions which make
it so costly to sail an American ship to
a foreign port, and with this little en-
couragement, if no more can be given, we
trust that our maritime interests will grow
more rapidly, so that our shipbuilders will
have a greater variety of work to give them
experience and speedily make it unne-

cessary for any American steamship company to ask permission to have their vessels built abroad.

Developments in the Spelter Market.

When we last wrote on the position of spelter, at the end of February, prices here had declined to a low ebb, common domestic selling at 4 1/4 cents @ 4 3/4 cents, about the lowest point for years, as we showed by a table giving the price for each month in 1880-81-82-83. During March and April the long-delayed demand at length began to manifest itself, and the price has gradually improved to 4 3/4 cents. Considering the general dullness in the metal market, this improving tendency in spelter certainly indicates that there are powerful reasons for the advance, unaccompanied as it is by speculation. The fact is that the revival in the demand finds the market in various important centers of distribution either bare or with greatly reduced stocks, while the output is notoriously light, curtailed by the unprofitableness of the industry in almost every locality. It is conceded that the position of spelter on this side has recently undergone a favorable change, and it becomes a matter of interest whether there is a probability of the price advancing sufficiently toward summer to induce importation. Our importation some eight years ago had dwindled to very small proportions, for at that time home production sufficed to cover consumption, but during the past four years there has been more room for foreign spelter for use in special purposes—galvanizing in particular—and in 1882, as will be seen by the table below, we had to procure a large amount from abroad, the demand for galvanized fence wire then being more active than before or since.

Import of Spelter into the United States, in tons of 2,240 pounds.

Calendar year.	Tons.	Calendar year.	Tons.
1876.....	225	1881.....	2,750
1877.....	568	1882.....	2,480
1878.....	492	1883.....	11,451
1879.....	1,908	1884.....	8,882
Total.....	3,133	Total.....	30,543

This shows that we imported during the past four years nearly seven times as much as we did the previous four years.

While this demand for and improvement in spelter has been going on on this side, Europe has shown no particular buoyancy, although it has been reported from there for months past that in Upper Silesia and Spain ore was getting both scarcer and dearer. The price remains depressed in Europe, probably on account of the open winter in Silesia and the great activity that has been prevailing at the smelting works there, but a general revival in business, which may soon take place, would undoubtedly cause an upward turn. We do not place much confidence in the success of a syndicate on the Continent, for a combination of that kind has but too often proved a failure; spelter may without such assistance possess intrinsic soundness enough to improve, as it has done here. Should a demand for America arise in the meantime, it would in all likelihood not fail to favorably influence the European market, although the 8000 tons we may take in 1884 are but a trifle withdrawn from a production of 250,000 tons. Whichever way we examine the position of spelter, it seems to inspire confidence, and there are grounds for believing it is on the eve of a material advance.

We are favored by Messrs. Ladenburg, Thalmann & Co., of New York, with the subjoined table showing the spelter production of the world since 1880, compiled by Henry R. Merton & Co., London:

Production of Spelter in Europe and the United States.

	1883	1882	1881	1880
Rhine District & Belgium.....	123,861	119,193	110,989	98,430
Silesia.....	70,405	68,811	66,497	64,459
Great Britain.....	27,661*	25,581*	24,419	22,000*
France and Spain.....	14,671	18,075	18,358*	15,000
Poland.....	3,788	4,400	4,000*	4,000*
Austria.....	2,859*	3,190	2,500*	2,500*
United States.....	948,390	890,250	926,738	906,909
Tons.....	32,790*	31,705*	30,000*	29,230*
Tons.....	276,080	273,024	256,788	230,048

* Estimated.

We observe that the reasons for the failure of a Western steamboat-repairing company are alleged to be "two fires, the floods last year and this year, and the dull business of the past six months." The company have certainly been severely afflicted, but the list might have included bad debts, a patent litigation, the defeat of the bonded whiskey bill, the riots, and the late fall in the price of wheat, for the greater consolation of their creditors.

On the 21st inst., at Youngstown, Ohio, a meeting of creditors of Brown, Bonnell & Co. rejected a proposition of the stockholders to settle for 50 cents on the dollar, or the full amount in stock in the new organization. A committee of five of the principal creditors was appointed to further consult the mortgage creditors and stockholders for final action, and report at a meeting to be held April 29. Cleveland creditors offer the principal opposition to the organization. The mills, with a dull iron market, cleared \$98,000 last year.

Messrs. C. B. Porter & Co., importers of tin plates and manufacturers of tinware, 128 North Second street, Philadelphia, have contracted for a new warehouse building, which is already well under way and will be completed early in June. The structure is situated at 231 North Second street, and is of brick, occupying a lot 250 feet deep. The

building itself is to be 150 feet deep, 28 feet front and four stories high, with unusually thick walls and heavy floors, designed for the storage of tin plates and metals. Two powerful elevators built by Clem & Morse, Philadelphia, will comprise the hoisting apparatus, and the structure, when completed, will be a very substantial and well-furnished warehouse. Messrs. Porter are about to issue a very low net price list on all goods in their line, which will be ready for distribution in a short time.

Railroad Car Axles.

To the Editor of The Iron Age.—DEAR SIR: In the reports of the condition of the iron trade I have been looking in vain for some word relative to one of the most important branches of not only the iron trade, but also of the greatest interest to railroad corporations, viz., car axles. In the market reports of iron, prices are given of almost every article manufactured, either of cast or wrought iron, save car axles, and this last article is really the most important of all, for upon its strength and quality so much depends as regards life and property.

As an ex-railroad official my attention has been called to this important part of construction of cars, on account of the astonishing low prices now ruling, and I wish to ask of railway managers and purchasing agents if, in the economy of their purchases for car building, it ever occurred to them that it is simply impossible to lay down \$5 and expect to get \$10 in return? If they do, it will be spurious. Upon inquiry I find that hammered-scraper axles are being made at the very insignificant price of 2 cents per pound, and at even lower prices. We all know that every one transacting business does so for what profit he can make out of it, and can we suppose that a concern will make and sell an article for 2 cents what costs 2 1/2 cents? I have been at some trouble to ascertain approximately the cost of making a car axle, and, as near as I can find out, good scrap iron, such as is only fit to make an axle of, costs from \$22 to \$24 per ton; the average price of coal is about \$2 75 per ton; the wages of expert axle-makers are as high now as when axles were selling at 4 cents per pound. Now, the result I arrive at is that the cost of an axle ready to turn up is not less than 2 1/2 cents per pound. Can it be credited by any sane man that such an axle would be or is sold for 2 cents per pound? And yet axles are sold for that price. The question then arises, Of what material are they made? This question will soon answer itself by the wrecking of trains caused by broken axles, and on examination the material will be found to be old rails or an inferior iron even worse than old rails.

This is a serious matter, and one which railroad managers and purchasing agents should look into carefully, or they will find that some day they will wish they had paid 10 cents per pound for their car axles. The rapid rate at which trains are run makes this question of transportation of human beings of the greatest importance as to safety. There is but one railroad corporation in this country who properly consider this question, and they have their axles made of iron according to a formula of their own, and they pay a good, round price, and I believe at this time are paying 8 cents per pound. I should like some one better posted than I am to give the facts in regard to the manufacture of this important article, and if our railroads will not do as they should for the safety of life, limb and property, the strong arm of Government should be invoked. Yours, EX R. R.

Effect of Expiration of Foreign Patents on Life of United States Patents.

Office of Dodge & Son,
ATTORNEYS AND SOLICITORS OF PATENTS,
WASHINGTON, D. C.

To the Editor of The Iron Age.—SIR: In your issue of the 10th you publish an opinion in reference to the effect of a prior foreign patent on the duration of the United States patent for the same invention, which, if followed, will lead the owners of patents into trouble.

As you will observe, that opinion was given early in 1882, and since that time there have been several decisions of the courts on the question involved which entirely overrule the position therein assumed.

In the case of *Riemer et al. vs. Sharpe*, 16 O. G., 355, Judge Blatchford held that the United States patent, which was granted October 20, 1874, by force of Section 487 expired at the end of the term of five years from May 15, 1873, that being the date of the Canadian patent, which was granted for five years, with the privilege of renewing it for five or ten years more, as provided in the Canadian law. In that case the Canadian patent had been renewed or extended before the expiration of five years, and yet the court held that that did not save it—that the original grant was for five years, and Section 487 limited the life of the United States patent to the term of original grant, and that hence the United States patent expired at the same as the Canadian patent.

Again, in the case of *Bate Refrigerator Company vs. Gillett*, 22 O. G., 1205, Judge Nixon held precisely the same, on the same condition of affairs. In that case, too, the Canadian patent had been extended.

Again, as late as August 29, 1883, in the case of the *Gramme Electrical Company vs. the Arnoux and Hochhausen Electrical Company et al.*, 25 O. G., 193, Judge Blatchford repeated this ruling in a case where an Austrian patent had been previously granted for the same invention, the Austrian patent bearing date December 30, 1870, and the United States patent bearing date October, 17, 1871. In that case it was shown that the application for the United States patent was filed before the application for the Austrian patent was; and, further, that although the Austrian grant on its face was but for one year, it was, in fact, under the Austrian law, a 15-year patent, as it could be kept alive for that period by the payment of certain fees, &c. Still the court held that the United States patent expired by the operation of Section 487, at the expiration of the term for which the Austrian patent was originally

granted, which was for one year from its date.

In the case of *Henry vs. the Providence Tool Company*, 14 O. G., 855, decided in October, 1878, the court held the same, although in that case the prior English patent had been extended. Still the court held that the United States patent expired with the original term of the English patent.

It will therefore be seen that, under the recent decisions, there is no longer any room for question on this point. A patent in the United States expires at the same time as the foreign patent which has the shortest term to run, in all cases where the foreign patent issued before the United States patent, even though the prior issue abroad was not intended. This condition of the law works great injustice to American inventors, as not unfrequently their applications here are delayed by unexpected causes—interferences, newly discovered references, &c.—after they have been allowed, and by that means their patent abroad issues first, when they did not intend to have it do so, and without any fault of theirs. It would seem but simple justice to hold that this rule should not apply in such cases.

A bill is now pending before the Senate (No. 672) amending Section 487, so that all patents hereafter granted in the United States shall run for the full term of 17 years from the date of the earliest foreign patent, but in no case to remain in force more than 17 years, and the application to be filed here within two years from the date of the foreign patent.

All persons interested should write their Senators and Members, urging the passage of this bill, which for the past six years we have been endeavoring to have passed.

DODGE & SON.

April 21, 1884.

Internally-Fired vs. Externally-Fired Boilers.

To the Editor of The Iron Age: The Iron Age of March 6, 1884, contains an article by Mr. George S. Strong, on forms of strength and efficiency in steam-boiler construction, the chief object of which seems to be to show that the Fox corrugated furnace is a great improvement to the Scotch type of marine boilers, and that it will also be found an improvement when introduced into internally-fired boilers for land and locomotive practice.

So far as Mr. Strong's article is confined to this object, no exception can be taken to it; but, incidentally, he makes a comparison of merits of internally and externally fired boilers, and draws some conclusions which the writer thinks are entirely without foundation.

In the first portion of his article he says: "The Lancashire and Galloway boilers have driven out all competitors from England and on the Continent; so must they, or modifications of them, drive out competitors in this country when their advantages are properly appreciated and understood." There are two objections to this statement. First, the Lancashire and Galloway boilers have not driven out all competitive boilers in England and on the Continent, and for land practice their importance is diminishing, as they are meeting with strong competition from several makes of externally-fired boilers, and especially externally-fired boilers on the water tube system. Second, there is no probability that the Lancashire and Galloway boilers, or modifications of them, will drive out competitors in this country when their advantages are properly appreciated and understood, from the simple fact that as soon as their advantages are understood their disadvantages will also be apparent, and this will effectively prevent their introduction into this country.

As to efficiency, Mr. Strong continues: "Every one who has had the opportunity of observing results of careful tests and long-continued experiments must be convinced that the internally-fired boiler has great advantages." "In this case it will be possible to get 10 pounds of evaporation as a regular practice, instead of 7 pounds, as is now the average with externally-fired boilers, in which the best and most effective portions of the heat—that is, the direct rays from the coal—are absorbed in the brickwork, while the gases are passed into the tubes and condensed before being consumed."

As one of those who has "had opportunity of observing the results of careful tests," the writer dissents from Mr. Strong's opinion that any such increase of evaporation as from 7 to 10 pounds can be expected from the simple substitution of an internally-fired for an externally-fired boiler, and could refer to scores of tests of externally-fired boilers in which the results were so good that it would be scarcely possible to beat them with any other form of boiler.

At the Centennial Exhibition there was a well-designed plant of Lancashire boilers, improved by the use of Galloway tubes, and, when tested with the same coal, the results were equalled and even excelled by several makes of externally-fired boilers. Mr. Strong is also mistaken in his statement that the most effective portions of the heat—the direct rays from the coal—are absorbed in the brickwork, since it is certain that these bricks, after they are once heated up to the temperature of the fire, thenceforth radiate to the fire and boiler all the heat which is received by them. As to the gases being passed into the tubes and condensed before being consumed, that is more likely to happen with an internally-fired boiler than with an externally-fired one, since in the former the furnace is surrounded on the sides by chilling surfaces, while in the latter it is surrounded, at least partially, by heating surfaces of fire-brick, the heat radiated from which assists in securing perfect combustion, and thereby increasing the economy. In locomotive practice with soft coal it has been found beneficial to make a fire-brick roof in the furnace, and even Galloway boilers have been set in Cuba with fire-brick furnaces, and fired underneath the shell, thus converting them into internally-fired boilers. The English engineering papers not long ago contained an account of a German's improvement in the economy of some internally-fired locomotive boilers, by cutting off the fire-box and re-setting with fire-brick furnaces.

Probably the best evidence of the fact that the internally-fired boiler is not going to supplant the externally-fired one in this country is that shortly after the Centennial Exhibition a finely-equipped and very expensive plant for the construction of these boilers was established at Edgemoor, Del., and, notwithstanding the fact that one of the best engineering firms in this country have had the agency of the Galloway boiler for some years, they have succeeded in making since that time but very few sales.

The principal disadvantages of the internally-fired boiler are due to the fact that, whenever economy of fuel or space occupied are main considerations, the boiler must be of large diameter and great thickness of shell. In the best marine practice the diameter of shell is 14 feet or more, and the thickness 1 inch or more. The disadvantages entailed by such excessive diameter and thicknesses are:

1. That, notwithstanding the great thickness, the pressure that can be safely carried does not exceed from 100 to 110 pounds. It would be almost impracticable to build a boiler of this type to carry pressures of from 150 to 175 pounds, such as are carried on the steamboats of our Western rivers.

2. The greater portion of the weight of the boiler—viz., the outer shell—is not heating surface, but only containing surface, and is useless for the very purpose for which a boiler is designed—that of transferring heat from the fire to the water. The great weight of metal which is not heating surface makes the boiler proportionately very costly.

In Europe, where metal and interest on money both cost less than in this country, the high first cost is not a serious disadvantage; but in this country the high first cost is one of the chief reasons why such boilers have not been adopted hitherto, and which will effectively prevent their adoption in the future, especially when boilers of small diameters can be made nearly as efficient as regards economy of fuel and of space. In addition to these disadvantages, there is a further one—that the internally-fired boiler generally has low furnaces, surrounded by chilling surfaces, which prevent the thorough combustion of the gases.

The boiler of the future must be one in which pressures of 150 pounds or over can be safely carried, and of which the first cost is not excessive. These conditions are met only by boilers in which the water is contained in shells of small diameters and thicknesses, and in which the major portion of the metal is efficient heating surface—viz., in externally-fired boilers. Respectfully,

M. E.

Some Canadian Census Statistics.

The second volume of the "Canadian Census for 1881," just published, though devoted exclusively to vital statistics, furnishes data for some interesting comparisons of the material progress of the Dominion during the past decade. As regards population, the growth of our neighbor appears quite respectable in the light of percentages of increase, although the numerical additions are not imposing. The increase in the total population in 10 years was less than a million, but the percentage was not far behind that of the United States, being 24 per cent., against 30 in the latter. In the two Provinces of Ontario and Quebec, which together contained 3,282,255 out of the 4,324,810 for the whole country, the ratio of increase was considerably smaller, being 18 per cent. for the former and 13 per cent. for the latter. In fact, one-third of the total increase is due to the enumeration of the population of Provinces not included in the previous census, as Prince Edward Island, Manitoba, British Columbia and the Territories; though it is likely that these contained but few inhabitants at that time. Immigration, due to the attractions of Manitoba particularly, was more conspicuous than ever before, and it was in the agricultural classes that the principal growth in the Canadian population has taken place. About one-fourth of the people are registered as being employed in some occupation, and their classification for the two last censuses, is as follows:

	1871.	1881.	Per cent.
Agriculture.....	479,512	662,080	38
Industrial.....	212,808	267,396	36
Commercial.....	75,301	107,646	43
Domestic.....	60,104	74,830	25
Professional.....	39,144	52,674	35
Not classified.....	113,973	206,228	43
Total.....	1,009,848	1,300,604	38

The number of agriculturists increased 38 per cent., giving an addition of 183,118, which, taken as families averaging four persons, would give more than one-half of the total increase to that class. Those classed as industrial increased 36 per cent., but the additions were only 74,493, while those classed as commercial increased 43 per cent. by the addition of 32,445. The total increase in all the employed classes was 380,761, or 38 per cent. The more specific enumeration of occupations shows that there was considerable progress made in the wealth of the people, though some industries, curiously enough, seemed to have undergone great diminution. The number of bankers and brokers increased in the 10 years from 472 to 1257, or 170 per cent.; merchants, from 13,446 to 17,449, or 22 per cent.; commercial clerks and travelers, from 19,607 to 30,471, about 50 per cent.; railway employees, from 2739 to 8220, over 200 per cent.; printers, from 2701 to 5227, nearly 100 per cent.; engineers and machinists, from 2945 to 9861, over 200 per cent., while the increase in butchers, bakers, gardeners, dressmakers, milliners, tailors, &c., ranged from 50 to 100 per cent. Almost all the industries exhibit some considerable increase, but a few show an astonishing apparent reversal of prosperity, if the figures can be relied upon. The number of manufacturers are enumerated at 2299, as against 6202 in 1871. Here is a decrease of 60 per cent., which would indicate that the great depression from 1873 to 1879 had been very fatal to that class of Canadian industries. It is not improbable, however, that the falling off was principally in small concerns, and that the products of manufacture have been fairly kept up by the accretion of capital to the larger establishments.

As regards the textile manufacturing, the number of weavers increased from 3735 to 4912, or near 33 per cent. The number of

lumbermen also decreased, being but 8094 in 1881, against 9030 in 1871, a falling off of near 25 per cent. The number of mechanics decreased from 4508 to 1503. This is a remarkable falling off for this class, and the fact is suggestive that during the depression many of these must have betaken themselves to agriculture. The millers decreased from 7134 to 5671, and the shipbuilders from 4250 to 3285. The figures are peculiarly significant in the face of a considerable increase in population.

The Oldest Railroad Engineer.

The Philadelphia Press says: The oldest railroad locomotive engineer in the United States is Lawson Lufkins, generally called "Squire" Lufkins, of the Philadelphia and Reading Railroad. He is as tall as Don Quixote, and almost as thin, but his career and character are the reverse of Quixotic. For nearly 40 years the rider of the swiftest of steeds, and in constant danger, he has never met with a windmill or other serious accident, and so far from roaming in search of adventure, he has devoted his whole thought and energy to his plain duty—to the carrying of his passengers safely to their destination and on time.

"Mine has been a very simple life," said the "Squire" recently; "and when I look back over the 37 years I ran a swift passenger engine, it makes me wonder that so few things stand out. It's all a dead level now. I began engineering when I was just 20 years old, which was pretty young, and you see I needn't be tottering on the edge of the grave to be the oldest engineer."

"Have you kept any record of your mileage?"

"Yes, a sort of record; but it would take months to make up any figures from it. It was a sort of account-book that I carried in my pocket. I would enter my boarding-house expenses, my mileage and other things all together. But I was an engineer 37 years, and run all the time between Philadelphia and Pottsville. This is a distance of 93 miles, but the run actually made is 100 miles, for there is a lot of side running. For five years, at the start, I had a freight engine, and all the rest of the time a passenger engine. For the last 14 years I doubled the run most of the time. Now you can make a calculation from these figures and facts. You say 1,800,000 miles? That seems a great deal, but I suppose it will do. I think an average of 150 miles a day for 350 days in the year, for 36 years, would be a moderate statement. That drops a whole year for safety's sake. But I do not take much pains to study on such sums in arithmetic. If I were a Frenchman, I suppose I'd know how many times my travels would have carried me around the world, and all such things. I only know they carried me so often between Philadelphia and Pottsville that I know every tie in the track and almost when each was placed there."

The extensive establishment of the St. Louis Shovel Works is situated in St. Louis, by the track of the Wabash Railroad. The main building is 300 feet in length and has a frontage on the tracks of 175 feet. These works have been recently erected, and contain the newest and most improved machinery for producing shovels and spades. This company, also known as the "Groom Shovel Company," has been in operation for nine years, and, having outgrown its old quarters, purchased ground and built entirely new works, in a location where special advantages are afforded for shipping and receiving by its own tracks. The company has its own water-works and excellent facilities for homes for its employees. The works are at the corner of Vandeventer and Duncan avenues.

The practicability of artesian wells as a source of water supply for villages has been very satisfactorily demonstrated in South Evanston, Ind. By boring to a depth of 1600 feet a powerful flow of pure, fresh water has been obtained, which is now being distributed throughout the streets in underground iron pipes to the residents of the village, without the aid of pumping works or other machinery, the natural force of the well itself being sufficient for all practical purposes. The water flows at the rate of 350 gallons a minute. The expense of boring the well was reported to be only \$3800.

A cable dispatch from London, dated the 21st inst., says that the arbitrator to whom the question of wages in the manufactured iron trade in Northern England was referred has decided upon a reduction amounting to 2 1/2 per cent. The employers demand a reduction of 10 per cent.

It has been calculated that the cost of London's winter smoke and fog is \$5,000,000 a year—that is to say, coal constituents to this value escape unconsumed, and assist in forming the sooty vapor known as a London fog.

The Buckeye Iron and Brass Company, of Dayton, Ohio, are running their brass force on extra time, manufacturing brass goods, &c. They have just received an order for 15 presses for a large concern at Sioux City, Iowa.

The Tricycle Manufacturing Company, of Springfield, Ohio, are erecting an additional brick building three and one-half stories in height and 150 x 48 feet, to be completed July 1. The company report that trade is very satisfactory.

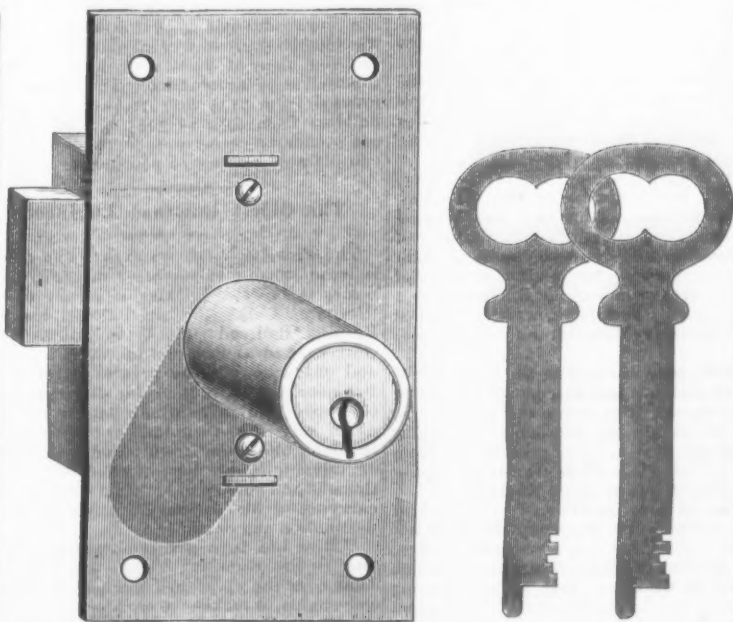
Alvin A. Winship, chief engineer of the steamship Reliance, and son of Ebenezer Winship, who for many years was superintendent of the Allaire Iron Works, in this city, died recently on the coast of Brazil.

On the 18th inst. the Albany and Rensselaer Iron and Steel Company filed in the County Clerk's office, New York, a judgment for \$17,952 against the West Shore and Ontario Terminal Company.

At a meeting of the directors of the Colorado Coal and Iron Company, held on the 21st inst., Henry E. Sprague was elected president, and W. E. Larremore vice-president.

EAGLE LOCK CO.,

Manufacturers at Terryville, Conn., and Geneva, Ohio.



MANUFACTURERS OF THE LARGEST VARIETY OF

CABINET, TRUNK AND PAD LOCKS

MADE BY ANY ONE CONCERN IN THE WORLD.

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The Celebrated Pieper Breech-Loading Guns.



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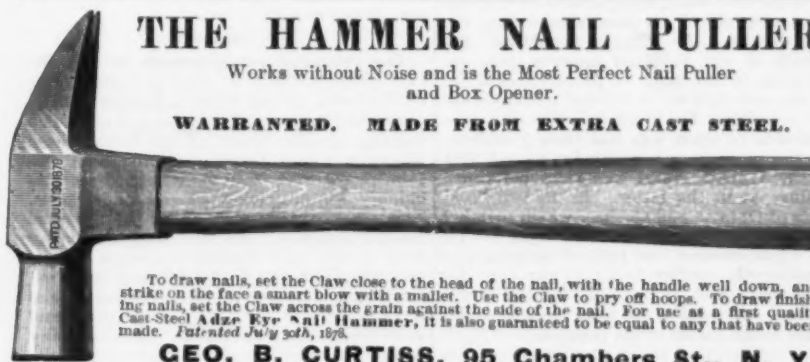
SCHOVERLING, DALY & GALES, 84 & 86 Chambers St., New York.

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Works without Noise and is the Most Perfect Nail Puller and Box Opener.

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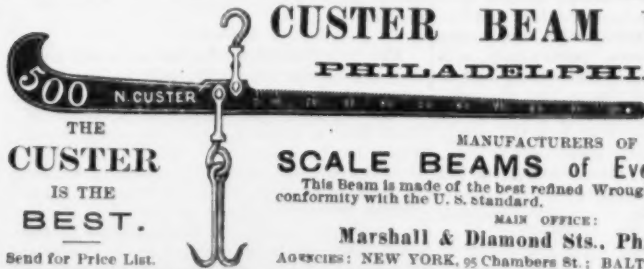


To draw nails, set the Claw close to the head of the nail, with the handle well down, and strike on the face a smart blow with a mallet. Use the Claw to pry off hoops. To draw finishing nails, set the Claw across the grain against the side of the nail. For use as a first quality Cast-Steel Adze Eye Nail Hammer, it is also guaranteed to be equal to any that have been made. Patented July 30th, 1876.

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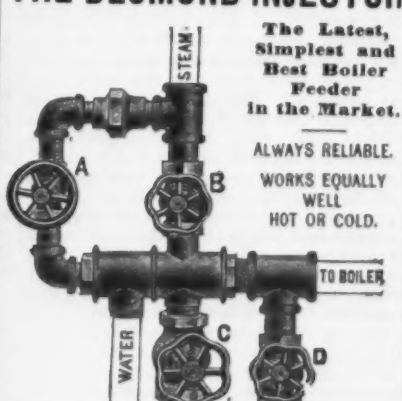
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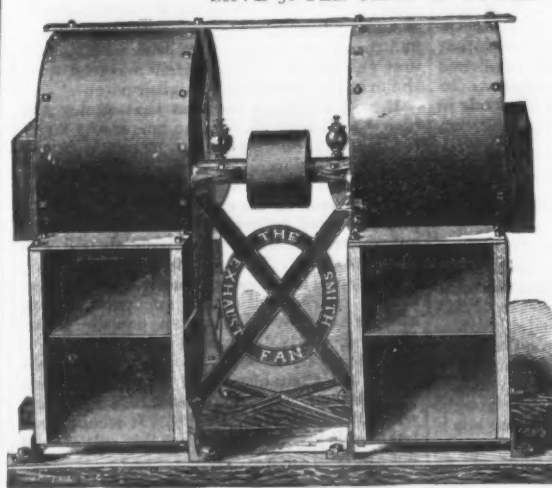


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DOUBLE EXHAUST FAN.

The Fans are specially adapted for removing dust from Emery and other Polishing Wheels; Grindstones and Cleaning Mills; Smoke and Gas from Machine Shops, Steam from Dyeing Establishments, Ventilating Buildings, Tunnels and Mines; removing Bark and Dust from Mills in Tanneries, Shavings and Dust from Planing Mill Machinery and other Wood-Working Establishments.

Cupola and Pressure Blowers are especially adapted to Cupola Furnaces and Forges, and all places where a strong Blast is required.

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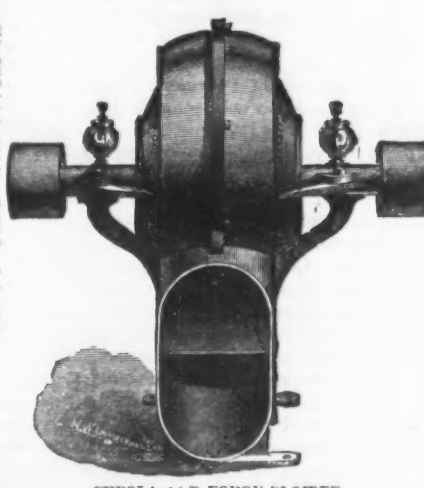
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Send for Catalogue and Prices.



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ROPE CLAMP SAFETY SNAP AND ADJUSTABLE ROPE BUCKLE

PAT. IMPROVED GERMAN SNAP.



(Cut No. 2.)



(Cut No. 1.)

including Cattle Ties (connection of which is shown by Cut 1), Horse Ties, Web Halters, Rope Halters, Rope Driving Reins, Halter Leads, Weight Cords, &c., &c., made up with valuable newly-patented fixtures, among which are the Rope Clamp (doing away with clumsy double-thick splice), Adjustable Rope Buckle (a secure and simple device), Halter Head-piece Clamp (holding head-rope constantly in position), Web Clamp, &c.; also, a complete line of

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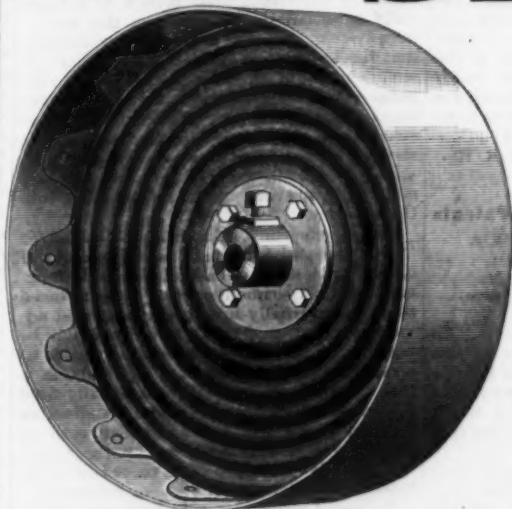
the Improved German Snap (Cut No. 2), with guard, preventing ring working beneath the tongue; the Safety Snap, from which the ring cannot twist out, and the Link Snap, the only perfect chain adjusting and repairing Snap in the market.

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THE FULTON STEEL PULLEY.



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Will Not Break during Transportation. Saves a Great Amount of Labor.

The ONLY STEEL Pulley Ever Made. Causes Less Slippage of Belts.

We are prepared to make these Pulleys, in sizes of even inches, from 10 inches to 36 inches diameter, any width of face, straight or crowning, tight and loose, solid or split.

In a recent elaborate and severe scientific test at the Franklin Institute it was demonstrated that a belt running over our Steel Pulley showed 15 per cent. less slipping than over a cast-iron Pulley.

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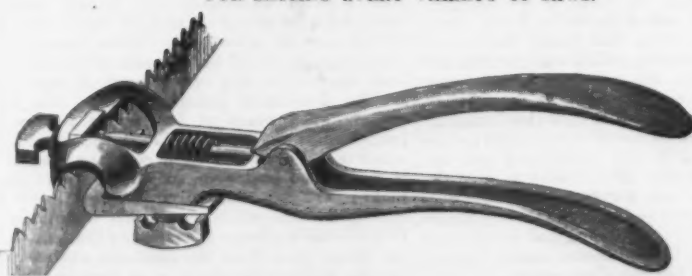
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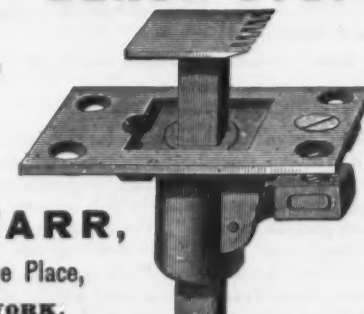
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Huggins Patent Sash Fixtures. Malleable Sash Balance, with and without Locks (see cuts), also New Sash Locks for ventilation; same closed without handling. Also Improved screw (three sizes), malleable iron; the 177 style—cast iron—sold at large discount from former prices. Send orders to H. H. HUGGINS, Maker, Hartford, Conn. (Goods delivered in N. Y. free of charge.)

THE BEST EVIDENCE OF ITS PECULIAR MERIT IS THE FACT THAT OUR SHIPMENTS AVERAGE TWO ENGINES PER DAY. Over 600 Engines and 16,000 H. P. now in operation. OUR PRICES ARE MODERATE. Send for Illustrated Circular and Reference List. THE WESTINGHOUSE MACHINE CO., PITTSBURGH, PA. (at Liberty Street, New York. Branch Office: 12 South Canal Street, Chicago. 201 Elm Street, Dallas, Texas.)

MILLER BROS. Trade Mark on Steel Pens, Ink Erasers and Rocket Cutlery guaranteed quality. Largest makers of Fine Creditable Goods in the country. STEEL PENS with style and action suited to every hand. Full assortment of Pens mailed on receipt of 25 cents. \$2.00 per gross. \$1.00 per quarter gross. Sold by all dealers. Price Lists furnished on application. The Miller Bros. Cutlery Co., Meriden, Ct.

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Special Notices.

NEW AND SECOND-HAND

MACHINERY.

1 45 in. Boring Lathe, 6 ft. between centers. 2d-hd.
 Engine Lathe, 72 in. swing, 3 ft. bet. centers. 2d-hd.
 Engine Lathe, 20 in. swing, 14 ft. bed. New.
 Engine Lathe, 21 in. swing 8 ft. bed. New.
 Engine Lathe, 20 in. swing, 12 ft. bed. New.
 Engine Lathe, 20 in. swing, 9 ft. bed. New.
 Engine Lathe, 20 in. swing, 3 ft. bed. New.
 Engine Lathe, 20 in. swing, 6 ft. bed. 2d-hand.
 Engine Lathe, 19 in. swing, 10 ft. bed. New.
 Engine Lathe, 19 in. swing, 7 ft. bed. New.
 Engine Lathe, 18 in. swing, 8 ft. bed. 2d-hand.
 Engine Lathe, 18 in. sw. 8 ft. bet. centers. 2d-hand.
 Engine Lathe, 18 in. swing, 8 ft. bed. 2d-hand.
 Engine Lathe, 17 in. swing, 7 ft. bed. New.
 Engine Lathe, 15 in. swing, 7 ft. bed. New.
 Engine Lathe, 15 in. swing, 3 ft. bet. centers. 2d-hd.
 Engine Lathe, 13 in. swing, 4 ft. bed. New.
 Hand Lathe, 12 in. swing, 4 ft. bed. New.
 Hand Lathe, 10 1/2 in. swing, 3 1/2 ft. bed. 2d-hd.
 Hand Lathe, 10 in. swing, 3 1/2 ft. bed. 2d-hand.
 Hand Lathe, 10 in. swing, 3 1/2 ft. bed. New.
 Hand Lathe, 9 1/2 in. swing, 3 1/2 ft. bed. 2d-hand.
 Foot-Power Hand Lathe, 8 1/2 in. swing, 3 ft. bed. New.
 Oval Turning Lathe. Second-hand.
 Iron Planer to plane 28 in. x 30 in. x 5 ft. 2d-hd.
 Iron Planer to plane 28 in. x 30 in. x 5 ft. 2d-hd.
 Iron Planer to plane 26 in. x 26 in. x 5 ft. 2d-hd.
 Iron Planer to plane 26 in. x 26 in. x 5 ft. 2d-hd.
 Iron Planer to plane 24 in. x 24 in. x 5 ft. 2d-hd.
 Iron Planer to plane 24 in. x 24 in. x 5 ft. New.
 Iron Planer to plane 22 in. x 22 in. x 5 ft. New.
 Iron Planer to plane 20 in. x 20 in. x 4 ft. New.
 Shaper Machine, 15 in. stroke, 23 in. traverse.
 11-in. Shaping Machine. 2d-hd.
 Shaper, or Compound Planer, 10 in. stroke. Bed

1 Shaping Machine, 10 in. stroke, 15 n. traverse.
1 6-Inch Shaping Machine. Second-hand.
1 24-in. Upright Drill. B. G. & S. F. New.
1 20-in. Upright Drill, B. G. New.
1 Four Spindle Gang Drill Press. New.
1 Four Spindle Gang Drill Press. P. & W. 2d-hd.

- 1 Three-Spindle Gang Drill Press, 20-hp. New.
- 1 Bench Drill, wheel and lever. New.
- 1 Bench Drill for 3/4 in. holes, lever feed. New.
- 1 Suspension Drilling Machine. 2d-hd.
- 1 Horizontal Drill. 2d-hand.
- 1 Heavy Column Drill, 36 in. swing. 2d-hd.
- 1 Post Drill, 72 in. swing. 2d-hd.
- 1 Hand Post Drill, 15 in. swing, self-feed. New.
- 1 Hand Post Drill, 10-in. swing, self-feed. New.
- 1 Pratt & Whitney Lincolin Mter. 2d-hand.
- 1 Lincoln Milling Machine. New.
- 1 Universal Milling Machine. New.
- 1 Parver Milling Machine Head. New.

1 Heavy Power Milling Machine, with Arm. New.
1 Back-Geared Power Miller, with Arm. New.
1 Hand Miller. New.
1 Hand Miller and Screw Slotter, hand feed.

1 Large Gear Cutter. Cuts 20 ft. diam. x 18 in. face.
1 Gear Cutter. Cuts 32 in. diameter. New.
1 Gear Cutter. Cuts 26 in. diameter. New.
1 14-inch Slotter to center of 54 in. 2d-hand.
1 Square Arbor Fox Lathe. for brasswork. New.

1 ¾ in. Centring Machine. New.
 1 3 in. Cutting-Off Machine. New.
 1 4½ in. Cutting-Off Machine. New.
 1 Heavy Upright Tapper for 6-in. holes.
 1 Horizontal Nut Tapper for 3-16 in. holes. New.
 1 Bolt Cutter, 2 in. and under. 2d-hand.
 1 Screw Slotting Machine. New.
 1 Wire-Feed Screw Machine. New.

2 Turret Head Screw Machines.
1 Cutter Grinder. New.
1 Twist Drill Grinder. New.
2 Emery Grinders on Stand. New.
5 Emery Grinders for bench work. New.

1 Pair Polishing Frames, for wood wheels, 2d-hand.
1 Heavy Polishing Frame, 2d-hand.
12 Pair Polishing Stands for wood wheels, 2d-hand.
1 Steam Hammer, 3½ in. x 7 in. Cylinder. New.
3 Shafting Straighteners, New.
1 Power Punch to punch ¼ hole in ½ in. iron.

1 No. 18 Adjustable Inclined Power Press. New.
1 No. 19 Adjustable Inclined Power Press. New.
1 No. 20 Adjustable Inclined Power Press. New.
1 No. 1 Screw Press on Legs. New.
1 Foot-Power Punching Press, $\frac{1}{2}$ in. x $\frac{1}{8}$ in.

Hand Lever Punch to punch 5-16 in. 5-16 iron.
Heavy Alligator Shear, 17 in. Jaws. 2d-hand
Power Slitting or Circular Shears New,
Squaring Shears for Power. New,
22-in. Squaring Shear for light sheet iron. New.

Squaring Shear, with open throat, for power.
 Pair Power Bending Rolls. 2d-hand.
 Pair Bending Rolls, for hand power.
 Double End Power Bending Machine. 2d-hand.
 Geared Bar Iron Cutter for 1 in. iron. 2d-hand.
 Long-Flute Drums. 2d-hand.

Large Foot Press, 2d-hand.
Small Power Press, 2d-hand.
Screw Press, 2d-hand.
Heavy Bench Screw Press, 3 in. screw, 2d-hd.
11-in. Drop Press, 2d-hand.
8-in. Drop Press, 2d-hand.

48-in. Paterson Forge, complete. 2d-hand,
 9 x 15 Blake Crusher. 2d-hd.
 Grindstones and Frames. New.
 Large Lot Pulleys and Hangers. 2d-hand,
 Lot Lathe Chucks, different sizes. New.
 Scrolling complete. New.

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19 DEY STREET, New York City.

Machine Shop for Sale,
with the good-will of a long-established business,
located in the center of the manufacturing dis-
trict of the city of Chicago. Contains about ten
lathes, three Planers and other Tools in propor-

tion, including a complete line of Engine Patterns—Slide-Valve, Variable Cut-Off and some Automatics. Also, long and valuable lease. This is a fine, complete plant, with the best modern tools throughout, and will be sold at a great bargain.

Address "MACHINE SHOP,"
office of *The Iron Age*, 36 Clark St., Chicago, Ill.

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SECOND-HAND 5% BAKER BLOWER.

SITES & GILL,
222 to 224 South Third St., Philadelphia.

FOR SALE.
To Furnace Manufacturers, Patent Exhibitors
and others.
Arrangements can be made to work Sutcliffe's
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feeding, super-heated air furnace, patented in the United States and a proved success in England, good royalties being obtained. The Patent Rights will be sold or shared with any respectable firm who will introduce it into the American market.

Address S. & P.

Wanted.

A Situation by a young man 21 years of age, a graduate of the Massachusetts Institute of Technology in the course of Mining Engineering. He refers to

Prof. R. H. RICHARDS,

For Sale,

Massachusetts Institute of Technology, Boston, Mass.
whom all applications should be addressed.

For Sale,

one of the most enterprising towns of the West, a good, selected stock of Shelf and Builders' Hardware, Stoves and Tinware, including Tin Shop. Capital, \$10,000. Party wishes to retire his business, and is willing to sell his interest.

Address A. M. HUTH,
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1965

Trade Report.

Philadelphia.

Office of The Iron Age, 220 South Fourth St.,
PHILADELPHIA, April 22, 1884.

Pig Iron.—The market remains in much the same position as detailed a week ago, and cannot fairly be said to be either better or worse. There is rather more inquiry, and, as regards Foundry Irons, holders are less disposed to shade prices than they were a week or two ago, the outlook for this class of Iron being somewhat more favorable. Stocks are light, and the current output is so largely taken on old contracts that the surplus is barely equal to daily requirements. Prices are unchanged, but there is a firm tone to the market, and \$20, delivered, for good No. 1, may be considered a minimum quotation. At the same time consumers show no anxiety about the future, and those who are buying from hand to mouth are probably getting Iron at as low figures as those who made contracts three or four months ago. The leading feature of the market, therefore, is complete indifference, no special anxiety to sell, and still less so to buy, unless it may be to cover immediate requirements. Attempts have been made to secure bids of \$19 and \$20 for summer deliveries by parties wishing to blow in a furnace or two, but there are no buyers at these figures unless for spot lots, so that if the furnaces are blown in the product will have to be sold from week to week at whatever figures the market may afford. Mill Irons are not quite as firm as Foundry grades, although some of the leading brands maintain a strong position at unchanged figures. There is a great deal of Iron offered at irregular prices, however, and, while some may be of good quality, others are more or less uncertain; hence buyers are afraid to touch it; but the effect on the market is very depressing. Good to choice Neutral Irons are held at from \$18 to \$19, delivered, while Cinder Irons are quotable all the way from \$17.50 down to \$16 or \$16.50, according to circumstances. The weakness, therefore, is more in off-grade Irons than in standard brands, although they impart some appearance of weakness to the general market—probably more in appearance than in reality.

Foreign Iron.—Nothing doing in Bessemer except in small lots, and no inquiries likely to lead to business. Low-Grade Spiegel is wanted at about \$24, Philadelphia or Baltimore, but holders ask from 50¢ to \$1 more money for such shipments, although willing to deliver in New York at \$24. We note sale of 1500 tons German Spiegel at \$23.75, Philadelphia.

Muck Bars.—The demand is not as brisk as it was some time ago, but sellers are moderately firm at former quotations—say, \$31 @ \$32, at mill, according to location—with sales at extreme quotations both ways.

Blooms.—The market is very quiet, and only limited quantities can be placed at quoted rates, which are nominally about as follows: Charcoal Blooms, \$55 @ \$56; Run-out Anthracite, \$45 @ \$46; Scrap Blooms, \$41 @ \$42; Northern Ore Blooms, \$39 @ \$41.

Bar Iron.—There has been very little change to notice for some time past, the general report being that the market is as dull and unprofitable as it possibly can be. There is no improvement in the demand, but inquiries are more numerous, and in view of the near approach of summer and the possibility of a considerable restriction in the output, sellers are more conservative, although still very anxious for business. So far as can be learned by careful inquiry, the demand is still of an exceedingly limited character; no large lots are inquired for, and even for small lots prices have been very unsatisfactory. Strictly first-class Refined Iron is held at 1.9¢ @ 2¢. Some claim to buy at less money, but for standard makes these are firm quotations, although Western Iron is offered at considerably less money.

Plate and Tank Iron.—Business continues very quiet, the demand for Plates being of the merest retail character. The mills are running very close to the end of their order-books, and for the present there is nothing to warrant the expectation of any material replenishment. Inquiries seem to have fallen off altogether, and the outlook is most discouraging. Prices are nominally the same as before, but on good-sized orders concessions would doubtless be granted. The usual quotations are: Boat Plate and Tank Iron, 2.2¢ @ 2.25¢; Shell, 2.75¢ @ 2.85¢; Flange, 3.75¢ @ 3.85¢; Fire-Box, 4.75¢.

Structural Iron.—The demand is fair, and about sufficient to enable manufacturers to keep their mills at work on half or two-thirds of their capacity. There is probably a better outlook in this than in most other departments of the Finished-Iron trade, although business cannot by any means be considered as altogether satisfactory. Prices are cut very close, while the amount of work under contract is not large, although there is reason to believe that there will be a steady flow of orders for some time to come. Prices remain as last quoted, viz.: Angles, 2.2¢ @ 2.25¢; Bridge Plates, 2.25¢; T's, 2.75¢; Beams and Channels, 3.5¢, less the usual discount on large orders.

Sheet Iron.—The demand is quite active, but prices, which have been for some time past at most unremunerative figures, show no improvement. Prospects for a large trade during the summer months are quite encouraging, and, while prices are held

with considerable firmness, it will not be easy to establish an advance, in view of the general depression in the Iron trade. Small lots are quoted as before, viz.:

Best Refined, No. 28.....	4 1/2
Best Refined, Nos. 26 and 27.....	3 3/4
Best Refined, Nos. 21 to 25.....	3 1/4
Best Refined, Nos. 18 to 20.....	3 1/4
Common, 1/4¢ less than the above.....	
Best Bloom Sheets, Nos. 26 to 28.....	6 1/2
Best Bloom Sheets, Nos. 21 to 25.....	5 3/4
Common Red Plates, 3-16 to 16.....	9 3/4
Blue Annealed.....	2 1/2
Best Bloom, Galvanized, discount.....	50
Second quality, discount.....	55
Common, discount.....	60

Wrought-Iron Pipe.—There is no change whatever in this branch. Business is dull, but prices are firmly adhered to at the same discounts as quoted last, viz.: Butt-Welded Black Pipe, 27 1/2 @ 30 ¢; Butt-Welded Galvanized, 17 1/2 @ 20 ¢; Lap-Welded Black, 47 1/2 @ 50 ¢; Galvanized, 32 1/2 @ 35 ¢; Boiler Tubes, 47 1/2 ¢.

Steel Rails.—There is little of interest to report in this department, business being slow and irregular on a somewhat weaker market. It is difficult to give exact figures for any but small lots, because buyers of large lots obtain special quotations. There is no reason to believe that anything over \$33 at mill has been realized for 1000-ton orders, but there is room for the opinion that that quotation has been shaded. In any event, small orders are readily placed at \$33.50, from which it is not unfair to assume that large orders can be placed on better terms, providing that deliveries are not too urgently required. We therefore quote \$33 @ \$33.50 at mill, according to quantity and quality.

Crop Ends.—There is some inquiry, and special makes of English or Belgian could find buyers at about \$21, but, owing to scarcity, sellers ask more money—say, \$22 @ \$22.50.

Old Rails.—There is no demand except for small lots, which may be quoted at \$22 @ \$22.50 for spot deliveries. Shipments from the South are offered at \$21.75 @ \$22, but there are no buyers at these figures, nor at anything near them, unless for very small quantities.

Scrap Iron.—The market is weak and lower. Choice No. 1 Wrought sells in small lots at \$23 @ \$23.50, but buyers are very careful in their selections. Cast Turnings offered at about \$11; Wrought do. at \$16.

Nails.—The good demand noted last week continues. Stocks are light, and manufacturers in this section find ready sale for all their product. Prices are well sustained, though no higher, viz., \$2.50 @ \$2.60, according to size of lot.

Pittsburgh.

[Special Dispatch to The Iron Age.]

PITTSBURGH, PA., April 23, 1884.

The special meeting of the Western Nail Association to-day was devoted to discussions of the minor details of the pooling plan. Without entirely perfecting the agreement, the association adjourned to their regular meeting in May. A resolution endorsing the action of the manufacturers' committee in demanding a reduction in the wages of labor for next year was adopted unanimously.

Office of The Iron Age, 77 Fourth Avenue,
PITTSBURGH, PA., April 22, 1884.

The unsettled and unsatisfactory condition of the general Iron trade noted for some time past continues, and the prospect for an early improvement is not encouraging. Not only is the volume of business very much reduced as compared with what it usually is at this season of the year, but prices are irregular and unremunerative. The weather during the past week has been very favorable, and, with the exception of being a little cold for vegetation, all that could be desired. The country roads are in good condition, but business, as already stated, does not improve.

The first conference meeting of the Iron manufacturers and Amalgamated Association took place on Saturday last. The representatives of the Amalgamated Association submitted their proposition, which was last year's wages with a few unimportant changes. This was positively refused by the manufacturers, who in turn reported the old scale with a reduction of 10 ¢, which was refused by the Iron-workers. Both sides refused to make concessions, and the conference adjourned without fixing any time for another meeting.

Ore.—The latest advices from the Lake Superior Ore region are that the market is steady, with upward of 2,000,000 tons contracted for. Prices are still quoted on a basis of \$6.25 @ \$6.50 for Republic, delivered on the dock at Cleveland. A good many contracts were made prior to the advance; one firm here is said to have contracted for 100,000 tons at the lowest price of the season.

Pig Iron.—The general position of this market remains much the same as noted in our last report; demand continues exceedingly light, consumers refusing to buy beyond immediate wants, and it looks as if the hand-to-mouth policy was likely to be adhered to for some time to come. The consumption here in Pittsburgh has fallen off somewhat recently and is unusually light for the season, as but few of the mills are running full, and until there is an improvement in the market for the products no change for the better in the raw material can reasonably be expected. Production continues light and stocks are very much reduced; but a small proportion of the fur-

naces west of the mountains are in blast, and those in blast are working on contracts, so that there is little or no "piling up."

We repeat former quotations:
Gray-Forge Neutral.....\$17.00 @ \$17.50, 4 mos.
Red Short Mill.....18.00 @ 18.50, 4 "
All-Ore Mill.....18.50 @ 19.00, 4 "
Foundry Grades.....18.00 @ 20.00, 4 "
Warm-Blast Charcoal.....22.00 @ 25.00, 4 "
Cold Blast Charcoal.....25.00 @ 28.00, 4 "
Bessemer Iron.....20.00 @ 20.50, 4 "

Some furnaces still refuse to sell their best brands of Neutral Mill under \$18, 4 months, but consumers have no trouble in obtaining all they want at \$17.50, 4 months, which is now regarded as the ruling price.

Muck Bar.—Continues very dull, and prices are weak and drooping; offers to sell at \$31, 4 months, the lowest price touched yet, and at which it is claimed there is little or no margin for profit.

Manufactured Iron.—No improvement to note, and manufacturers generally talk discouragingly; not only is the demand light for the season, but prices continue unsettled and unremunerative. Trade has been very disappointing all spring, but a good summer trade would straighten matters out. Merchant Bars are still quoted at 1.75¢ @ 1.85¢ @ 1.9¢, according to size and character of orders.

Nails.—The demand continues light for the season, but manufacturers are hopeful of an improvement later on. Large buyers are still holding off in expectation of lower prices, and, once they become reasonably assured on this point, a considerably increased demand, it is confidently expected, will follow. The indications are that there will be at least an average trade this summer, and, notwithstanding business is dull at present, manufacturers are all running their factories in expectation of an improvement in the near future. There is little or no stock in the hands of jobbers, who for some time past have been buying only as their immediate necessities required. We continue to quote at \$2.35, 60 days, 2 ¢ off for cash, in carload lots and upward, and 5¢ @ 10¢ ¢ keg additional in a jobbing way.

Wrought Iron Pipe.—In this, as in nearly all other branches of the Iron trade, business continues backward and disappointing, but hopes of an early improvement are entertained. Prices remain unchanged, as follows: Discount on Black Butt-Welded Pipe in carload lots, 30 ¢; less than carload, 27 1/2 ¢; on Galvanized, 20 ¢ and 17 1/2 ¢. On Black Lap-Welded Pipe, carload lots, 50 ¢; less than carload, 47 1/2 ¢; on Galvanized do., 35 ¢ and 32 1/2 ¢. Selected Pipe, or Pipe cut to specified length, discount per cent. less in the gross than on regular Pipe.

Steel.—The Merchant Steel trade continues unsatisfactory and unsettled, but few, if any, of the mills running full. Prices remain unchanged. Best brands Refined Cast Steel, 9 1/2 ¢; do. Crucible Machinery, 5¢; Bessemer and Open-Hearth do., 3 1/4 ¢ @ 3 1/2 ¢.

Steel Rails.—The market continues quiet and prices remain unchanged at \$35, cash, at mill, with a sale of 2000 tons reported. Both the mills here are still in operation, having had a good many orders booked for future delivery.

Old Rails.—There is still considerable inquiry for small lots, and with light offerings, the market is steady at \$23.50, at which the last sales reported were made. Old Steel Rails quoted at \$19 @ \$20.

Railway Track Supplies.—The demand for everything in this line continues light, while prices remain unchanged. Railway Spikes, 2 1/2 ¢, 30 days; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2 1/4 ¢ @ 3¢.

Crop Ends.—The last sale of American reported was at \$19, at which more are offered.

Scrap.—The Scrap market continues quiet. Sales of Wrought Scrap at \$20 @ \$21 net ton; Car Axles, \$29 @ \$30; Wrought Turnings, \$16 @ \$17; Cast Borings, \$13 @ \$14. Old Car Wheels appear to be scarce, with some inquiry; quoted nominally at \$19 @ \$20, gross.

Window Glass.—There is considerable inquiry, and the outlook is favorable for a good summer trade. Prices remain unchanged; discounts on Single Strength in carload lots, 60 and 20 ¢; on Double, 70 and 5 ¢.

Coke.—There has been little or no change in the situation during the past week. Business continues to be all that can be expected in view of the unsatisfactory condition of the Iron trade. No change in price; \$1.10 ¢ ton, free on cars, at ovens.

Coal.—The continued suspension of river navigation for Shipping Coal has had a good effect, having stiffened the down-river market.

Chicago.

Office of The Iron Age, 36 and 38 Clark St.,
Cor. Lake St., CHICAGO, April 21, 1884.

Hardware.—The market continues in about the same condition as last week. Jobbers report a good demand, but still complain of low prices. Indeed, this seems to be the chief complaint in all branches of trade. Jobbers say that if they were receiving prices which would pay them for handling their goods, the present volume of trade would be satisfactory. Seasonable goods are the chief demand, while Heavy Hardware and Blacksmiths' Tools are on the increase. Anvils have had a steady call, which has nearly exhausted the supply. Barb Wire has recovered from the shock the recent advance produced, and is in greater demand than a week ago, at 5¢ and 5 1/2 ¢ for Four and Two Point respectively for Painted, and 1¢ extra for Galvanized, these prices covering only the most common manufactures. There are Special Wires, such as the Link and Sheet Iron Barb, which cannot be bought for less than 5 1/2 ¢ @ 6 1/2 ¢ in carload lots.

Nails.—The demand for Nails is steady, and varies with the weather rather than

with the effort of manufacturers to control prices by syndicate government. Those in this market who are interested in the movement to pool the product and increase the prices are very reticent regarding its success. We learn that the attempt has not met with the favor that was expected, and that this weak point has had an earnest effect upon consumers who were uncertain as to what course to pursue. The demand is confined to quantities of less than 50 kegs, which can be had at from \$2.50 to \$2.55, 2 ¢ 60 days—a decline of 5¢ ¢ keg, with strong indications of still greater weakness.

Ore.—Nothing has occurred to change the status of the Ore market since our last report. The Republic Ore Company are quoting \$6.50 on dock at Cleveland, which has the effect of driving out of the market all those in this vicinity who contemplate buying—at least, temporarily.

American Pig Iron.—The prospects in this market are less favorable than in the early part of the year. During January and February there was hope; to-day there is despondency in the trade. Producers and dealers alike complain of sales and prices. Since February there has been a decline of \$1 ¢ ton on the strongest class of Iron, which is Lake Superior Charcoal, and the one quality upon which a decline was least expected. Some other brands which are more plentiful have suffered a still greater decline, and can be bought to-day at \$2 ¢ ton less than three months ago. Notwithstanding these facts, there is being considerable Iron sold, but only for prompt consumption, in lots ranging from one to two carloads, and even less when shipping is not a consideration. Since the reduction in freights going east, some Charcoal Iron has found its way into latitudes heretofore excluded, which has helped to strengthen the market and sustain activity. A number of Charcoal furnaces are temporarily out of blast for repairs in the Lake Superior district, but the supply continues to fully meet the demand. In Coke and Southern Irons there is the same feeling and plenty of stock on hand. Anthracite Irons are not coming into the market, it being generally conceded that they are crowded out by the Coke Irons from the Mahoning and Shenango valleys. For carload lots, 4 months, we make the following quotations: Lake Superior Charcoal, Nos. 1, 2 and 3, at \$22 @ \$23; Nos. 4, 5, and 6 at \$24; Lake Superior Coke at \$21; Lake Superior and Ohio, mixed, at \$21; Ohio Standard Black Band, No. 1, \$21 @ \$22; Southern, No. 1, at \$20, and No. 2 at \$19; Silvery Soft at \$19 @ \$21; Anthracite, No. 1, at \$22, and No. 2 at \$21.

Scotch Pig.—There is nothing of importance in this branch. The market remains quiet and weak, with no signs of improvement. We continue our quotations of last week—\$26.50 for Summerlee and \$27 for Glengarnock.

Merchant Steel.—The demand for Steel is almost exclusively for the extra brands. In the lower grades business is so thoroughly demoralized that it is impossible to arrive at a price or determine the condition of the market. For the best quality of Tool Steel the demand for the past week was pretty fair, as was also the demand for Machinery and Plow Steel. Speaking of the market as a whole, the demand is slow, prices exceedingly weak and no visible indications of improvement. We make the following quotations for the Best Refined grades:

	Per pound.
Best Refined Cast Tool Steel.....	9 1/2 @ 10¢
Crucible Cast Machinery Steel.....	6 1/2 @ 6 3/4
Open-Hearth Machinery Steel.....	3 1/4 @ 3 1/2
Bessemer Machinery Steel.....	3 1/4 @ 3 1/2
Open-Hearth Spring Steel.....	3 1/4 @ 3 1/2
Tool-Cut Steel.....	3 1/2 @ 3 3/4
Bessemer Steel.....	2 3/4 @ 3 ¢
Cast Plow Steel.....	4 1/2 @ 4 3/4
German Plow Steel.....	3 1/2 @ 3 3/4
Syndicate Steel.....	9 1/2 @ 9 3/4
Fire-Box and Boiler Steel.....	5 1/4 @ 5 1/2

Steel Rails.—We have no information which alters the market one iota from our last report. Mills are asking \$37 @ \$39, and there seems to be no inducement to cut these figures, for new contracts of importance are not in the market.

Old Rails.—There is no change in the market for Old Rails. Holders of stock are firm in their demands, and there seems to be no probability of mills meeting their figures at the present price of Bar Iron. For Chicago or Milwaukee delivery \$19.50 @ \$21 is quoted, while we learn of several thousands tons having been sold at Pittsburgh for \$22.50 by one of the Western roads.

Bar Iron.—The demand which has characterized the Bar Iron market for the past month continues vigorous, and as the season advances the orders for large lots become more numerous. The store trade is also very satisfactory in quantity, though orders are not larger than present consumption dictates. For New Puddled Best Refined we continue our quotations of \$2 @ \$2.10 from store, allowing a tenth off for special orders and specifications. Common Iron is remarked a trifle stiffer, but is still quoted at \$1.80 rates from mill.

Norway Bars.—There has been no developments in trade that changes the market from what it was a week ago. Trade is only of medium quantity, and prices the same as during the past three months, viz., 4¢ rates, with a tenth off to merchant trade.

Structural Iron.—Thus far we can report a slight improvement in the demand for Structural Iron. The business moves slowly, and is confined almost exclusively to stock trade and in small lots. There are some heavy contracts under way, but the backward spring has greatly interfered with projected structures and those under way, so that it may be some weeks yet before the

true state of the trade is brought out. In the meantime manufacturers are exerting themselves, and a lively time is anticipated through competition. We quote as follows from mill: Beams, \$3.60; Channels, \$3.60; T Iron, \$3; Angle Iron, \$2.50; Flitch Plates, \$2.50; Frieze Plates, \$2.70. From store, 1/4 ¢ @ 1/2 ¢ extra.

Galvanized Iron.—While we are able to note an improvement in the demand for Galvanized Iron, we cannot refrain from noticing the weak and declining figures for even the best brands. The antipathy which some manufacturers have for others reaches even to the consumers and jobbers, and he's to support the "knife" element in cutting down prices, and demoralizing still further, if possible, a market that has neither quality nor demand to stand upon. For Juniata we quote 50 and 10 ¢ off, and Refined 55 and 10 ¢ off, for small lots, with possible greater discounts for larger orders.

Black Sheets.—Market dull and prices weak. No change in prices, which are subject to concessions for an order of any importance. We quote as follows: Nos. 10 to 14 at \$2.60 @ \$2.70; No. 24 at \$3.20; Nos. 25 and 26 at \$3.30, and No. 27 at \$3.40.

Scrap Iron.—Mills are quoting \$17 @ \$18, as heretofore. We make the following quotations, which are dealers' purchasing prices: No. 1 Wrought Scrap, 1/2 net ton, \$17; Cast Scrap, 1/2 net ton, \$14; No. 1 Stove Plate Scrap, 1/2 net ton, \$9; Wrought Turnings, 1/2 ton, \$8; Cast-Iron Borings, \$7; Old Plow Steel, \$10; Tool Steel, 1/2 ton, \$10; Steel Tire, 1/2 net ton, \$15; Buggy Springs, 1/2 net ton, \$18; Malleable Scrap, \$5.

Old Car Wheels.—The demand for Old Wheels continues more favorable than the supply. Holders are asking from \$20 to \$22, while \$18 @ \$19 are the prices offered by local dealers. We learn of 1000 tons having been sold at \$22, Pittsburgh, last week by a Western road.

In connection with the Bar Iron trade we append the following card, issued by Kelley, Maus & Co., of Chicago, under date of April 10, 1884:

NOTICE OF REMOVAL.
To our Friends and Customers: We beg to announce that we have removed to Nos. 184, 186, 188 and 190 Lake street, corner Fifth avenue, where in future we shall be pleased to see you. Our stock is large and complete, and buyers will find it to their interest to call upon us before purchasing elsewhere. Thanking you for your valued patronage, the continuance of which we hope to merit, we remain, very truly yours,
KELLEY, MAUS & CO.

EVERETT & POST, 156 Lake street, Chicago, report to us as follows, under date of April 19, 1884: **Pig Lead.**—Our market has dropped off during the past week, in sympathy with New York. The price is nominally 3.65¢, with but few transactions to report. A feeling generally prevails that the present decline is but temporary, as there is not a great stock of Lead in sight, and the production certainly has not increased. Late advices from the West report continued decrease in Ore and Bullion.

Chattanooga.

Office of The Iron Age, Carter and Ninth Sts.,
CHATTANOOGA, April 21, 1884.

The weather has been very fine during the past week. Agricultural operations are being pushed, and this tends to dull trade in the towns. The industrial situation continues quiet, with but one strike of any consequence in the section—that of the carpenters and shipbuilders of New Orleans—in progress. There is a general shortening of production in most Southern industries, yet we daily hear of new projects of building factories and extending old plant. Among the new ventures are a large blast furnace at Chattanooga, an extensive foundry for casting Mantles, Stoves and Pipe at Birmingham, and a \$1,000,000 Cotton factory at Columbus, Miss. There are large numbers of small Iron and Wood-working establishments contemplated or building at various points in the section.

Pig Iron.—Current trade in crude metal is light, and mostly to small concerns, whose managers buy only for immediate wants. Five of the nine Coke stacks in the immediate neighborhood are idle; yet the talk about the mythical contract of an iron-master in that district contracting to deliver No. 1 Foundry at \$12.50 ¢ ton, on cars at furnace, goes on in the free-trade newspapers. The movement of metal to fill contracts of February last makes a show of business, and serves to keep most of the furnaces going. Citco, at Chattanooga, is moving off satisfactorily, and will probably prove to be the finest-working stack in the South. Holders are still slow to sell far ahead at quotations for large lots. We quote round bills at \$14.70 @ \$15 for Mill; \$17 for No. 1 Foundry at furnace. We quote for small lots to consumers, 60 days: No. 1 Foundry, \$18 @ \$19; No. 2 Foundry, \$17 @ \$18; Gray Forge, \$16 @ \$17; White and Mottled, \$14 @ \$15; Car-Wheel Metal, \$23 @ \$24.

Ores.—We quote Fossilliferous Ores, averaging about 45 % Metallic Iron, \$1.50 ¢ ton, delivered at river landings; higher qualities, \$1.75. Brown Hematite, \$1.75 @ \$2 on cars at furnace.

Miscellaneous Articles.—Old Rails are dull at \$21. Scraps are dull and nominal. Wrought Scrap, \$15 @ \$16; Cast Scrap, \$11 @ \$14; Old Wheels nominal, \$18 @ \$20.

Nails—Are steady at \$2.50 for carloads, usual deduction for cash. Job lots, 10¢ @ 15¢ higher.

Merchant Iron—Bar Iron is steady but dull at \$1.85 for round assorted lots. Bolts, \$2.80 @ \$3 for Square and Hexagon Heads; Spikes, \$2.35; Splices, \$1.90.

Coal—We quote Fancy Lump Coal at \$3; Common, \$2.50; run of mine to manufacturers, \$1.50 @ \$1.75 at mills.

Coke—We quote at \$2 @ \$2.20 at furnace; Foundry Coke at 8¢ @ 10¢ bushel.

Barbed Wire—We quote Four-Point Galvanized, 6¢ @ 7¢; Cambria Link, 6¢ @ 7¢.

Cincinnati.

APRIL 21, 1884.—**Pig Iron**.—Dealers report inactivity in the market, transactions being confined entirely to the supply to meet present needs of consumers, while the desire on the part of producers and holders is to see prices remain at former quotations. It is thought that the present conditions of the market will obtain through the year. Quotations for the past week:

Hanging Rock Charcoal Foundry, No. 1, 100 lbs.	\$22.00 @ \$22.50
Tennessee and Alabama No. 1, 100 lbs.	19.50 @ 20.00
No. 2, 100 lbs.	18.00 @ 18.50
Hanging Rock Coke, Best No. 1, 100 lbs.	19.00 @ 19.50
No. 2, 100 lbs.	18.00 @ 18.50
Hanging Rock Coke, Good, 100 lbs.	18.00 @ 18.50
No. 2, 100 lbs.	17.00 @ 17.50
Alabama, Virginia and Tennessee, 100 lbs.	18.00 @ 18.50
American Scotch Hanging Rock, No. 1, 100 lbs.	20.25 @ 20.50
No. 2, 100 lbs.	19.25 @ 19.50
Others, No. 1, 100 lbs.	19.00 @ 19.50
Others, No. 2, 100 lbs.	18.50 @ 19.00
Hanging Rock Silver Gray, No. 1, 100 lbs.	18.75 @ 19.00
Others, No. 1, 100 lbs.	18.50 @ 18.75
Others, No. 2, 100 lbs.	17.50 @ 18.00
Car-Wheel, Cold-blast Charcoal, 100 lbs.	28.25 @ 30.00
Car-Wheel, Warm-blast Charcoal, 100 lbs.	21.00 @ 27.00
Forge Charcoal, 100 lbs.	20.00 @ 21.00
Forge, Coke, No. 1, 100 lbs.	17.00 @ 18.00
Forge, Stovecoal, Nos. 2 and 3, 100 lbs.	16.00 @ 16.50

No sales Scrap reported.

St. Louis.

HOFFER & Co., Pig Iron and Iron Ore Merchants, 318 Olive street, report to us as follows, under date of April 19, 1884: We have no change to note, either in prices or the condition of the market. We quote:

MISSOURI	\$19.00 @ \$20.00
Southern	20.00 @ 22.00
Ohio	21.00 @ 25.00

COAL AND COKE IRONS.	
Missouri	19.00 @ 20.00
Southern	18.50 @ 19.50
Ohio	21.00 @ 25.00

MILL IRONS.	
Red-short	17.50 @ 18.50
Neutral	17.00 @ 18.00

CAR WHEEL AND MALLEABLE IRONS.	
Missouri	19.50 @ 21.00
Southern	25.00 @ 26.00
Ohio	28.00 @ 32.00

Louisville.

GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of April 19, 1884: The iron market continues quiet. Sales are light, with very little disposition to book orders for future delivery. Furnaces generally are firm in price:

PIG IRON.	
Southern Coke, No. 1, Foundry	\$18.50 @ \$19.25
No. 2, Foundry	17.50 @ 18.00
Hanging Rock Coke, No. 1, Foundry	19.50 @ 20.50
No. 2, Foundry	18.50 @ 19.50
Southern Charcoal, No. 1, Foundry	22.00 @ 23.50
Silver Gray, different grades	16.00 @ 18.00
Southern Coke, No. 1, Mill, Neutral	15.50 @ 16.00
No. 2, Cold-blast	15.00 @ 15.50
Southern Charcoal, No. 1, Mill	19.00 @ 18.00
White and Mottled, different grades	14.00 @ 14.50
Southern Car-Wheel, standard brands	26.00 @ 27.00
Southern Car-Wheel, other brands	22.00 @ 24.00
Hanging Rock, Cold-blast	27.00 @ 28.00
Warm-blast	22.00 @ 23.50

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, Louisville, under date of April 19, report as follows: There is a slightly better demand for Bar Iron, but the lots are very small and for immediate delivery, and go at once into consumption or serve to sort up the skeleton country stocks. The mills are pushing their product on the market with rather unusual persistency, which indicates thin order books. Yet while this process is going on they all claim to be losing money, and insist that some change must be speedily effected to prevent a general catastrophe. There is a good deal of complaint of poor quality and lack of finish of the iron which is sold at bottom figures, and the more careful manufacturers will not accept it without submitting it to tests and having it covered by guarantee. **Hoop Iron**.—There is also a slight improvement in this grade of iron, and some contracts are being made for May delivery, which indicates confidence in the present prices. **Sheet**.—The heavier gauges are quiet, and large lots could probably be had at concessions. Stove-pipe gauges 26 and 27 demand a slightly better price than they did 60 days ago. **Steel**.—Tool Steel is only in limited demand. The low prices made by the manufacturers seem not to have stimulated its increased use. The season for Agricultural Steels is about over. These have been sold at unquestionably low figures this year. **Nails** are very active. The spring demand, which was so long deferred, seems to have blossomed out all at once under the influence of the genial sun, and the present prices will doubtless hold good until the bulk of the trade is over. We do not hear much more talk of the pool, and can hardly see how it could be satisfactorily formed under the avowed intention of some of the makers to stay out, and any plan which left out the consideration of the Eastern mills would hardly succeed, as every now and then the low freights enable the latter to reach the Western and Southern markets on as favorable a basis as the local mills. The introduction of Steel Nails, too,

would be a disturbing element in any arrangement with the Iron Nail mills. **Wire**.—Wire is still extremely scarce and firm. The trouble is not so much to get the advance as it is to get the wire. All through this country, since the floods have swept away the fences, there has been an unprecedented demand for Barb Wire. Improvements in the erection of fences and a better understanding of how to treat the wire itself have rendered it more popular, besides the important economy in the saving of the country's timber. All farm goods are moving actively, and the general trade in Shelf Hardware is, on the whole, about as satisfactory as usual at this season.

Baltimore.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of April 21, 1884: This market remains about the same as last reported—that is, quiet and unsatisfactory for the season. Values continue notably unchanged, as per annexed figures:

Ref. Bar Iron, 1 to 6 x 3/4 to 1, 100 lbs.	\$21.00 @ 22.00
" 1 to 4 1/2 x 1 1/4 to 1, 100 lbs.	20.00 @ 21.00
" 1 to 4 x 1 1/4 to 1, 100 lbs.	19.00 @ 20.00
and Square, 100 lbs.	20.25 @ 20.50
Hoop Iron, 1 1/2 wide and upward	23.00 @ 24.00
Band Iron, from 1 1/2 to 6 in. wide	23.00 @ 24.00
Horse-shoe Iron, 100 lbs.	31.00 @ 32.00
Norway Nail Rods, 1/2 x 9 ft.	5.00 @ 5.50
Black Diamond Cast Steel, 100 lbs.	4.00 @ 4.50
Machinery Steel, 100 lbs.	4.00 @ 4.50
Spring Steel, 100 lbs.	4.00 @ 4.50
Common Horse Nails, 100 lbs.	10.00 @ 11.00
Common Horse Nails, 1/2 x 9 ft.	2.00 @ 2.50
Perkins's Horse Shoes, 1/2 keg of 100 lbs.	\$3.50 @ 3.75
" Mule Shoes, 100 lbs.	4.50 @ 4.75

R. C. HOFFMAN & Co., Pig and Railroad Iron Merchants, No. 21 South Frederick street, write as follows, under date of April 21, 1884: The Pig Iron market shows no change. The inquiry continues light, with business limited, at former quotations, as follows:

Baltimore Charcoal Wheel Iron (all Baltimore Ore)	\$28.00 @ 29.00
Virginia C. B. Wheel Iron	28.00 @ 29.00
Anthracite, No. 1	21.00 @ 22.00
No. 2	20.00 @ 21.00
No. 3	18.00 @ 19.00
" Mottled and White	14.00 @ 16.00
Charcoal C. B. Blooms	50.00 @ 55.00
Refined Blooms	40.00 @ 45.00

Richmond.

ASA SNYDER, Iron Merchant and Furnace Agent, 1008 Cary street, writes as follows, under date of April 19, 1884: The iron trade has developed no new features since last report. It continues in the old rut—i. e., sales of small lots for immediate want. Prices are as follows:

No. 1 Scotch Pig Iron	\$22.00 @ 25.00
No. 1 Anthracite Pig Iron	22.00 @ 25.00
No. 2	20.00 @ 22.00
No. 3	19.00 @ 21.00
No. 1 Virginia Coke Pig Iron	19.00 @ 21.00
No. 2	17.50 @ 19.00
No. 1 " (Mill Pig Iron)	16.00 @ 17.00
White and Mottled	16.00 @ 17.00
Virginia C. B. Car Wheel	20.00 @ 22.00
Wrought Scrap, No. 1	19.00 @ 20.00
Machinery Scrap, No. 1	17.50 @ 18.00
Old Rails	23.00 @ 24.00
Old Dom. Nails, 1/2 keg	2.00 @ 2.50
Richmond Refined Bar Iron, 1/2 keg	2.00 @ 2.50
Horse Shoes (Tredgair) 1/2 keg	4.00 @ 4.50
Mule	5.00 @ 5.50

Old Metals, Paper Stock, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy	11.00 @ 11.50
" light	10.00 @ 10.50
Copper Bottoms	10.00 @ 10.50
Yellow Metal	07.00 @ 07.50
Brass, heavy	07.00 @ 07.50
" light	06.00 @ 06.50
Composition, heavy	10.00 @ 10.50
Lead, heavy	08.00 @ 08.50
" light	07.00 @ 07.50
Zinc	09.00 @ 09.50
Pewter, No. 1	14.00 @ 14.50
No. 2	10.00 @ 10.50
Wrought Iron	12.00 @ 13.00
Light	10.00 @ 10.50
Stove Plate Iron	14.50 @ 15.00
Machinery	4.50 @ 5.00
Grate Bars	04.00 @ 04.50
Steeple Plate	04.00 @ 04.50
Electrotype	03.00 @ 03.50
Small Type	05.00 @ 05.50

The prices current (prices paid by local dealers) for Rags, &c., are as follows:

Canvases, Linen	34.00 @ 4.00
White Cotton, New	34.00 @ 4.00
White, No. 1	25.00 @ 25.50
No. 2	13.00 @ 13.50
Seconds	14.00 @ 14.50
Soft Woollens	5.00 @ 6.00
Mixed Rags	15.00 @ 15.50
Gunny Bagging	2.00 @ 2.50
Butte	2.00 @ 2.50
Kentucky Bagging	2.00 @ 2.50
Book Stock	13.00 @ 14.00
Newspapers	1.00 @ 1.50
Waste Paper and Scraps	1.00 @ 1.50
Kentucky Bale Rope	3.00 @ 4.00

Coal.

The Anthracite Coal trade is without animation, but, now that the new programme is tolerably well understood, a revival of business is looked for immediately on the opening of navigation at various points. Both shippers and miners are more hopeful since the announcement last week of the plan of restriction for May and June. This week and next week until May 5, production is on full time; then suspension begins and lasts until May 10; then May 23, 24 and 25; and the next shall be in June, three days first and then one week. The total output of Anthracite Coal so far this year is 5,939,140 tons, or 161,556 tons less than at the same period of 1883. It is understood that prices are shaded in some instances. No large orders are reported. The total amount of Anthracite Coal sent to market for the week ending April 12, as reported by the several carrying companies, was 765,707 tons, compared with 446,060 tons in the corresponding week last year.

The Philadelphia North American says: "The plan of suspension for a whole week is hard on such furnace proprietors as have but little storage room, and they have been squealing for a day or two; but neither furnace nor manufacturing sizes are as important a part of the total output as they

were, except Pea Coal, among the latter. Pea Coal sells as cheap or cheaper than Bituminous, and manufacturers readily buy it.

Imports and Exports.

The following were the Imports of Hardware Iron, Steel and Metals into the Port of New York for the week ending April 23, 1884:

Hardware.	
Ascher S.	Scrap, tons, 30
Machinery, case, 1	Bars, 1964
Berkebeck Julius & Co.	Rivet wire rds., coils, 333
Cases, 2	Wrought, case, 1
Brice & Johnson	Wire rods, coils, 3901
Cases, 2	Rail ends, tons, 250
Baker Hermann & Co.	Railroad Spikes, 1/2 x 9 ft., 21,034
Hdw., cutlery and guns, 42	Wire rods, coils, 825
Delamater C. H. & Co.	
Mdse., case, 1	
Duval H. R.	
Mdse., case, 19	
Field Alfred & Co.	
Cases, 16	
Fletcher W. H. & Co.	
Mdse., case, 8	
Folsom H. & D.	
Mdse., case, 2	
Fraser P. A. & Co.	
Cases, 1	
Godwin Samuel & Sons	
Machinery, case, 1	
Graef Cutlery Co.	
Cases, 17	
Gt. West. Disp. Co.	
Machinery, pkgs., 18	
Hartley & Graham	
Mdse., case, 11	
Judd H. L. & Co.	
Cases, 5	
James R. S.	
Machinery, pkgs., 11	
Bars, 50	
Market & Co.	
Cases, 7	
Merch. Disp. Co.	
Guns, case, 1	
Newall Universal Mill	
Cases, 3	
Machinery, pkgs., 28	
Patrick C. H.	
Nails, kegs, 112	
Patton V. & Co.	
Sewing mach., cs., 13	
Pim, Forwood & Co.	
Machinery, box, 1	
Rothschild Ludwig & Co.	
Cases, 2	
Schoverling, Daly & Gales	
Mdse., case, 12	
Schloss & Son	
Machinery, case, 1	
Smith Alex. & Sons	
Machinery, cs., 17	
Thurman G. M.	
Cases, 3	
Von Cleff & Co.	
Mdse., case, 6	
Ward Asline	
Cutlery, cs., 4	
Wienstein Bros. & Co.	
Hdw. and cutlery	
Anvils, 340	
Wolfe Udolpho Sons & Co.	
Machinery, case, 1	
Order	
Files, cases, 6	
Cases, 7	
Machinery, cs., 29	
Machinery, pkgs., 100	
Cases, 7	

Steel.	
Abbott Jere & Co.	
Firearms, cs., 3	
Plum, gals., 371,918	32,340
Mach'y, pkgs., 2	4,38
Bayonets, cs., 2	120
Clocks, cs., 45	700
Cutlery, cs., 2	120
Wringers, cs., 15	278
Saw, ma., cs., 1855	36,405
Hdw., cs., 40	877

Hamburg.	
Ag. imp., pkgs.	390,948
Mf. iron, pkgs.	1,39
Firearms, cs., 3	26
Plum, gals., 371,918	32,340
Mach'y, pkgs., 2	4,38
Bayonets, cs., 2	120
Clocks, cs., 45	700
Cutlery, cs., 2	120
Wringers, cs., 15	278
Saw, ma., cs., 1855	36,405
Hdw., cs., 40	877

Fredericia.	
Plum, gals., 183,570	15,000
Udvalde.	
Plum, gals., 127,366	12,565
Rotterdam.	
Plum, gals., 307,225	37,110
Amsterdam.	
Plum, gals., 428,387	35,650
Gibraltar.	
Plum, gals., 30,000	2,050
Malta.	
Plum, gals., 124,910	13,114
London.	
Mach'y, pkgs.	16,064
Clocks, pkgs.	31,100
Types, cs., 1	100
Saws, cs., 6	244
W. mills, pkgs.	10,548
Cartridges, cs., 3	62
Scabbards, cs., 4	575
Sew. ma., cs., 1	120
Freezers, cs., 6	312
Ag. imp., pkgs.	322,105
Hdw., pkgs., 134	5,071
Rd. rds., cs., 35	400
Mf. iron, pkgs.	3,110
Wire gds., cs., 3	126
Arms, cs., 48	1,815
Nickel pl., case	1,250
Gun caps, cs., 4	730
Empty shells	82,764
Bullets, cs., 4	57

Am. Meter Co.	
Tinned plates, cs., 13	
Am. Express Co.	
Gun and imple-	
ments, 1	
Baldwin Bros. & Co.	
Platina, case, 1	
Baring Bros. & Co.	
Tin plates, bxs., 3134	
Bond Parsons & Co.	
Cop. Ore kg., 1,848,182	
Bohm, Meyer & Co.	
Tin plates, 1978	
Bond Parsons & Co.	
Copper ore, kg., 1,848,182	
Bristol J. & M. Brass Co.	
Mdse., case, 4	
Dickson, Van Dusen & Co.	
Tin plates, bxs., 323	
Downing R. F. & Co.	
Nickel, case, 5	
Eggers & Heinlein	
Old brass, pcs., 11	
Old copper, case, 1	
Old copper, pkgs.	
Field Alfred & Co.	
Gun caps, cs., 48	
Frazier, Jas.	
Type metal, ingots,	
80	
Handrich F.	
Cop. screws, case, 1	
Hartley & Graham	
Gun caps, cs., 6	
Metals, cs., 8	
Bullets, case,	
Meyer G. A. & E.	
Zinc oxide, bbls., 300	
Moore's Sons J. P.	
Pumps, pkgs., 14	
Naylor & Co.	
Tin plates, bxs., 281	
Tin sheets, cs., 73	
New Haven Clock Co.	
M. H. L. & Co.	
Old copper, case, 6	
Pelphs, Dodge & Co.	
Tin plates, bxs., 1,348	
Black tag's, bxs., 314	
Reld J.	
Butts and sinks, 7	
Schoverling, Daly & Gales	
Gun caps, cs., 10	
Stevenson, Pierson & Co.	
Sheathing, cs., 8	
Star Union Line	
Metrical capsules, cs., 2	
Windmiller L. & Roel-	
ker	
Zinc oxide, cks., 59	
Order	
Tin plates, bxs., 7050	
Tin and tern plates,	
bxs., 677	
Black taggers, bxs.,	
100	
Terne pils, bxs., 308	
Zinc sheets, cks., 117	
Antimony, cks., 117	

Cases, 5	Plates, 255
Schöverling, Daly &	Bundles, 41
Gales.	Cases, 10
Mise, cs., 12	Old spring, tons.
Schloss & Sohne.	150 $\frac{1}{2}$
Machinery, case 1	
Smith Alex. & Sons.	
Machinery, cs., 17	
Thurnmaier G. M.	Metals.
Cases, 3	Am. Meter Co.
Vom Cleff & Co.	Tinned plates, cs., 1

Trade Report.

General Hardware.

The reports which come as to the condition of the Hardware trade in different parts of the country indicate a fairly satisfactory condition of things. Hardware manufacturers and merchants, while they find many causes of complaint in sluggish demand and low prices, are probably doing at least as well as those in other branches of business. Many manufacturers are well occupied with orders, and while there are very few goods that are actually scarce, there are indications that stocks are running low. A better feeling is reported in the Louisville and Chicago markets, where there is a good demand, especially in seasonable goods. Southern trade, while dull at present, is regarded as promising, the industrial and financial conditions giving a hopeful outlook. Export trade is decidedly dull, though it is reported better than a little while ago. In some lines we hear of a heavy falling off in volume, for which no satisfactory reason is given. The reciprocity treaty with Mexico will, it is expected, open that market for some important lines of goods, and manufacturers will doubtless be on the alert to avail themselves of the opportunity to place their goods as soon as the treaty goes into effect. New England trade is reported quiet, and New York State and Ohio trade as exceptionally even and satisfactory. Importers find much cause for complaint as to orders from stock, but mention that their import orders are fair. Collections in the main are reported good, but we hear of some complaint of tardiness in remittance. The financial condition is, however, generally regarded with satisfaction, as the trade as a whole are pursuing a careful, conservative policy, and buying only such goods as they need and are able to pay for.

NAILS.

During the past week the general demand for Nails has been very satisfactory. From the best information obtainable it is believed that the jobbing and retail trades are very poorly supplied with Nails, and, therefore, an improving demand is naturally expected with the advance of the season. Some of the companies supplying this market are refusing to book orders ahead, in the belief that there is no danger of prices declining, while they wish to be in a position to take advantage of even a slight advance, if that occurs. We hear of other companies which are not so sanguine about the future, but are booking all the orders at current rates which they can get, some of them having secured enough work to keep them running until June. Stocks are still low in the city and factory warehouses, and there is an increased inquiry for the sizes which are in short supply. Prices under such circumstances ought to be firm, with an upward tendency; but disquieting rumors are prevalent of offers of Western Nails at rates considerably under those which have now for some weeks been pretty generally current here. We do not learn of actual sales having been made here of Western Nails, but the quotations in circulation are having their effect on buyers. Sales here have been generally upon the basis of \$2.50 for large lots and \$2.60 @ \$2.65 for small lots, some brands being available at slightly lower rates.

As will be noted by a telegram from Pittsburgh which appears elsewhere, at a special meeting of the Western Nail Association today the details of the proposed pool were discussed, but the agreement was not perfected. The action of the manufacturers' committee in demanding a reduction in wages for next year was unanimously approved. The meeting adjourned to meet again on the second Thursday of May.

BARB WIRE.

The manufacturers of Barb Wire are enjoying a continuance of the active demand which has been reported from week to week for over a month. The busy season is expected to continue until at least the middle of June. Eastern factories have their capacity engaged for weeks ahead, and consequently experience much difficulty in supplying their customers. Reports from the West indicate a similar condition of affairs out there, but we hear of more new factories being equipped in that section to secure some portion of the business. We continue to quote Four-Point Galvanized at 6 cents per pound for carload lots, and 6½ cents per pound for Thickset, with the usual advance for smaller quantities; Painted Wire, 1 cent per pound less.

The Iowa Barb Wire Company will remove their New York office from 87 Liberty street to 98 Reade street on the 1st of May.

STEEL AND WOOD GOODS.

Reports agree that the combination is still maintained with strictness, and it is generally regarded that all danger of a break for the present season is over. The demand has not been as early nor quite as large as usual, though some manufacturers of Steel Goods report that they are well stocked with orders, and some goods for immediate delivery are scarce. Snath and Cradle manufacturers speak of trade as unusually late, but there is no change in prices, 40 and 5 per cent. discount from the association list being firmly held. Hoes remain at low prices, with a good demand, and there is some prospect that they will be taken into

the combination prior to next season. In Steel Goods the situation has been somewhat embarrassed by the fact that Hoes are not in combination, and there is no doubt that they have been used to some extent to sell the Forks and Rakes. The presence also in the market of outside manufacturers has had a tendency to complicate matters somewhat, and some goods are sold below association rates. Steel Rakes and Hoes are becoming scarcer, and orders are not in all cases filled promptly.

The Seymour Manufacturing Company, manufacturers of the Grain Cradles and Scythes, have for some time past been making their Creelmoor Patent Cradle Fastening, which is illustrated in their advertisement on page 35, an article which seems to be received with favor by the trade. This contrivance, it will be observed, is provided with an adjustable socket by which the cradle may be easily attached or detached and the scythe more readily fitted or matched. The manufacturers also describe the fingers of the cradle-head as set with a wind or gather, which prevents to a great extent the scattering of the grain, and holds it firm until the operator is ready to unload the gavel.

WIRE NAILS.

As our readers are aware, a number of manufacturers have recently entered on the production of these goods, for which there is undoubtedly an increasing demand. It is not unlikely that the advantages which these Nails possess for many kinds of work, and the probability that they can be produced by improved processes of manufacture at lower figures than heretofore, will give them a largely increasing sale. They are quoted discount 30 to 35 per cent., but the market prices are at present somewhat unsettled, the competition which exists inducing a good deal of cutting, and sales are made below the nominal quotations.

The Hartman Steel Company, for whom Page, Dennis & Co. are agents in this city, have issued a circular calling special attention to their Wire Nail department, with its large facilities for the production of all the varieties of these goods. They also mention that their Nails are made of Steel Wire, and enumerate some of the advantages which this line of goods possesses over the Cut Nail. The table below, which they publish, showing the approximate number of Wire Nails per pound, will be of interest. It should be added that these approximate numbers are an average only, and the figures given may be varied either way by changes in the dimensions of the heads or points.

The American Wire Nail Company, Covington, Ky., to whose catalogue we called attention a few weeks ago, report trade in fair volume. They have recently made and issued a neat and convenient Nickel-Plated Wire Gauge, Bell pattern, which is designed for the use of their customers. Other manufacturers allude to the increasing demand for Wire Nails, on account of the evident advantages they possess for many kinds of work.

Inch.	3-16	¼	⅜	½	⅝	¾	1	1 ⅛	1 ¼	1 ½	1 ¾	2	2 ¼	2 ½	2 ¾	3	3 ½	4	4 ½	5	6	7	8
Wire Gauge.																							
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HORSE NAILS.

There are no new developments in reference to the relation of the methods used by other companies to the patents held by the Globe Nail Company, but the impression prevails that some action will soon be taken which will indicate the course this company will pursue. Some of the companies are unquestionably unaffected by the decision in question, but a good many of them are watching with some solicitude the course things will take. It is reported that one of them has ceased manufacturing for the present, preferring to await developments, and it is said that another company, thinking they might be affected by the decision under their former method of making Nails have made some changes in their process of manufacture, that they may be unquestionably secure. Most of the companies supposed to be affected by the decision express confidence that the Globe Company have no case against them, alleging either that their methods are not an infringement of the patent in question, or that the patent itself is invalid.

E. Bissell & Co., the well-known Hardware auctioneers, announce an important AUCTION SALE at their rooms in Chambers street, on Tuesday and Wednesday of next week. It will

be perceived by their Special Notice on another page that it embraces an extensive line of goods, for the details of which we refer our readers to the advertisement.

TIN PLATES.

There is a fair trade for roofing and other outside work, but the demand otherwise remains moderate. The slight advance which occurred a week or 10 days ago, principally in Cokes, has not been maintained, and prices have settled back to about the former level.

GLASS.

The market for imported Glass is slightly firmer than at our last report, and discount 75 and 5 to 75 and 10 is quoted as the current price. The continued strike in Belgium has the effect of limiting the imports and imparting a stronger tone to the market. Some dealers are unwilling to make large sales at present figures, anticipating an advance before long. The demand continues fair, but not heavy.

THE CLIPPER MANUFACTURING COMPANY,

543 West Sixth street, Cincinnati, Ohio, have issued an illustrated catalogue showing the line of Kitchen Specialties which they manufacture, and to the quality and merit of which they direct special attention. They mention as an article entirely new, and for which they have just received a patent, the Clipper Condensing Coffee or Tea Pot, for which they make special claims. This article has a water-cup in which cold water is placed to act as a condenser, and a lawn sack in which the ground coffee is put, the pot being made steam-tight, so as to retain all the aroma and strength of the coffee. The following is the list which specifies the articles that these parties make, the list prices being subject to a discount to the jobbing trade of 25 per cent.:

Clipper Safety Lamps, Plain Tin, or Japaned, and colors, with Burners, per doz.	\$5.00
Clipper Safety Lamps, without Burners, per doz.	3.80
Chimneys, No. 2, Sun Bulbed (¾ gross in a box), No. 2, 10 inch, per gross.	8.00
Wicks, No. 2, 10 inch, per gross.	8.00
Clipper Flour and Meal Sifters, per doz.	2.25
Condensing Coffee and Tea Pots (2 quart), per doz.	7.00
Clipper Condensing Coffee and Tea Pots (3 quart), per doz.	7.50
Clipper Condensing Coffee and Tea Pots (4 quart), per doz.	8.75
Clipper Patent Pie Pans, 9 inch, per doz.	10.50
" " Shallow Jelly Pans, 9 inch, per doz.	7.00
" " Deep " " 10 inch, per doz.	8.50
" " Tubed Cake " " 9 inch, per doz.	1.00
" " " " 10½ inch, per doz.	2.00
" " Centennial Cake and Baking Pan (iron), 9 inch, per doz.	4.00
Clipper Centennial Cake and Baking Pan (iron), 10 inch, per doz.	4.50

They pack Lamps 6 in a package, 1, 2, 3 and 6 dozen in a crate. Flour Sifters 1, 2, 3, 6 and 12 dozen in a crate. Coffee Pots ½ dozen and 1 dozen in a crate (each size packed separate). Pie Pans, Shallow Jelly Pans, Deep Jelly Cake Pans and Tubed Cake Pans wrapped in dozen packages, each kind and size separate. Centennial Cake and Baking Pans, nested, wrapped half-dozen in a package, each size separate. Chimneys, 6 dozen in a box. Wicks, 1 gross in a package. The manufacturers announce that they will not break packages, and their customers are

The following is the list of the other Braces which they make, from which a discount of 40 and 10 per cent. is given:

Amidon's Improved Ratchet Bit Brace.	
Full Nickel Plate, Lignumvitae Head and Rosewood Handle—Steel Sweep.	
No. 8, 8-inch sweep, per doz.	\$35.00
No. 10, 10 " " " " " " " "	38.00
No. 12, 12 " " " " " " " "	41.00
Without Plating, Plain Finish, Black Walnut Head and Handle.	
No. 8, 8-inch sweep, per doz.	\$33.00
No. 10, 10 " " " " " " " "	36.00
No. 12, 12 " " " " " " " "	39.00
Barker's Improved Bit Brace.	
Full Nickel Plate, Lignumvitae Head and Rosewood Handle.	
No. 8, 8-inch sweep, per doz.	\$15.00
No. 10, 10 " " " " " " " "	17.00
No. 12, 12 " " " " " " " "	19.00
Without Plating, Plain Finish, Black Walnut or Lignumvitae Head and Handle.	
No. 8, 8-inch sweep, per doz.	\$13.00
No. 10, 10 " " " " " " " "	15.00
No. 12, 12 " " " " " " " "	17.00
Amidon's Patent Universal Bit Brace.	
No. 8, 8-inch sweep, per doz.	\$5.00
No. 10, 10 " " " " " " " "	6.00

THE MALLORY, WHEELER & CO. CORPORATION.
The firm of Mallory, Wheeler & Co., New Haven, Conn., whose business of manufacturing Locks was established in 1834, was dissolved on the 8th inst. by mutual consent. The following are the names of the members of the late firm: Frederick B. Mallory, Rukard B. Mallory, J. Davenport Wheeler, William H. Andrews, John S. Davenport, James R. Davenport, Elizabeth W. Davenport, and Theodosia M. Dexter, executrix. The same parties were, on the same date, by a resolution of the General Assembly of the State of Connecticut, passed at its January session, 1884, incorporated under the name of The Mallory, Wheeler & Co. Corporation, and all its property, assets and effects turned over to the new corporation, which will hereafter carry on the business of the old firm, with Frederick B. Mallory as manager.

NEW GOODS AND PRICES.

The following is the list for the new Sliding Door Lock and Latch Combined, manufactured by Williams & White, 116 Chambers street, New York, of which we give a description in another part of this issue, the discount being 40 and 7½ and 10 per cent.

No. 0133, Latch only, per dozen.	\$12.00
" 0134, Lock 1 Key, " " "	30.00
" 0135, Lock 2 Keys, " " "	36.00

The Eureka Garden Hose, which is illustrated in the advertisement on page 13, and manufactured by the Eureka Fire Hose Company, 13 Barclay street, New York, is sold at the following prices: ¾ inch, at 25 cents per foot, and 1 inch at 35 cents per foot, subject to a discount of 50 and 10 per cent. The manufacturers mention that this Hose for the present season has been greatly improved in appearance, and claim it to be now unequalled by any Hose on the market, adding that it is superior to the best rubber Hose for durability and strength, that it is mildew-proof and will stand over 500 pounds pressure per square inch. The same company are known as extensive manufacturers of Fire Hose, which is the leading department of their business.

The following is the list of Roberts' Adjust-

Inch.	3-16	¼	⅜	½	⅝	¾	1	1 ⅛	1 ¼	1 ½	1 ¾	2	2 ¼	2 ½	2 ¾	3	3 ½	4	4 ½	5	6	7	8
Wire Gauge.																							
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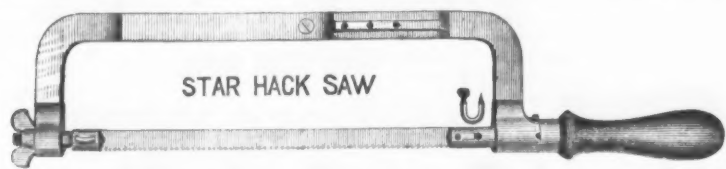
able Window Screen, manufactured by Shimer & Co., 230 South Fourth street, Philadelphia, the discount to the trade being 20 per cent. on small lots:

18 x 35, each.	\$0.50
20 x 35, " " "	1.00
24 x 35, " " "	1.50
28 x 35, " " "	2.00
30 x 35, " " "	2.50
36 x 35, " " "	3.00
40 x 35, " " "	3.50
48 x 35, " " "	4.00
54 x 35, " " "	4.50
60 x 35, " " "	5.00

Packed in crates of two dozen. For the same Wire, in Walnut Frames, 20 cents a piece extra will be charged. For Figured Wire, in Regular Frames, \$1 per dozen extra.

This Screen, which is represented in the advertisement on page 29, is made under a recent patent, and is put on the market with special claims for its convenience, excellence and cheapness.

The following are the list prices, with discounts, of the Hardware Specialties manufactured by the Barker Hardware Company Cincinnati, Ohio:		
Peerless Door Spring	Dis. 40 per cent.	
No. 9.....	per gross, \$15.00	
No. 8.....	" " " " " " " "	32.00
No. 7.....	" " " " " " " "	36.00
No. 6.....	" " " " " " " "	40.00
The Automatic	Dis. 60 per cent.	
3 inch.....	per gross pairs, \$30.00	
Japanese.....	Dis. 60 per cent.	
Per gross pairs.....	" " " " " " " "	\$30.00
Eclipse Spring Hinge	Dis. 40 per cent.	
Per gross pairs.....	" " " " " " " "	\$36.00
Eclipse Door Spring for Screen Doors	Dis. 50 per cent.	
Per gross.....	" " " " " " " "	\$34.00



Star Hack Saw Price List.

PRICE OF BLADES.

Length of Blade	6 inch.	7 inch.	8 inch.	9 inch.
Price per Dozen Blades	55	60	65	70 cents.

PRICE OF STEEL FRAMES PER DOZEN.

No. 1 Extension Frame, Polished and Nickel Plated, per Dozen	\$9.60
" 2 Solid	8.40

These frames are all made of steel, and, as seen in the cut, are all adjustable so as to face the blade in four different directions. The extension frames will hold the four different lengths of blades. The solid frames only hold the 8-inch blades, this being the length most in use; they all have the patent staple-shaped pins to hold the blades in the frame, which are so arranged that they cannot fall out. We say that the Star Hack Saw is 100 per cent. better than any other kind in use. If, on a fair trial, it is found that one dozen of our Saws will not cut as much as two dozen of any other kind, we hereby authorize all dealers to return what they may have in stock, at our expense. Now, if our competitors have the same faith in their saws, let them make the same offer, so that dealers may unload what they don't want, and sell only the best, whichever one it proves to be.

MILLERS FALLS CO.,

74 CHAMBERS ST., NEW YORK.

CHAMPLAIN
Forged Horse Nails.
MANUFACTURED BY THE
NATIONAL HORSE NAIL CO.,
Vergennes, Vermont.
HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST
NORWAY IRON AND WARRANTED.
WAREHOUSE
97 CHAMBERS AND 81 READE STREETS NEW YORK.
DURRIE & McCARTY, Sole Agents.

Bonney's New Hand Vise.



This is strictly a first-class article, embracing some new and desirable features. 1st. Both jaws open and close simultaneously, so that anything held therein is not only central, but on a line with the handle—a great advantage in filing, &c. 2d. It is hollow, allowing a rod to pass entirely through it, as shown in cut. A desirable feature, often saving much valuable stock.

BONNEY VISE & TOOL CO., Philadelphia, Pa., U. S. A.

H. B. SEIDEL, President. W. HASTINGS, Vice-Pres. and Gen'l Mgr. E. T. CANBY, Sec. and Treas.

THE SEIDEL & HASTINGS CO.,

WILMINGTON, DELAWARE,

New York Office, No. 90 John St.; Entrance on Gold St.

MANUFACTURERS OF

BEST CHARCOAL BOILER PLATES, AND PLATE IRON GENERALLY.

ALSO BEST QUALITY HOMOGENEOUS STEEL PLATES.

We ask the special attention of the trade to our C. H. No. 1 Boiler Plates, which we manufacture expressly for the Shells of Steam Boilers and stamp 50,000 pounds T. S. when desired. One hundred and sixteen tests of this iron, made during the last three years by the U. S. Inspectors of Steam Vessels, show an average tensile strength of 58,808 pounds to the sectional square inch, and an average reduction of area of the fractured section of 30% per centum. Our prices are as low as the production of a good article will admit of.

VARIETY IRON WORKS.
ALFRED C. REX & CO.,
MANUFACTURERS OF
Hardware Specialties,
IRON TOYS AND NOVELTIES.
Main Office and Factory, Frankford, Phila.
Phila. Sample Office, 415 Commerce St.
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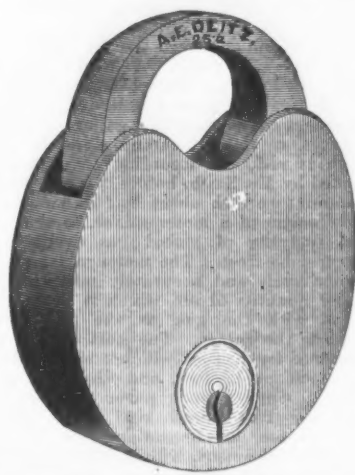
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FORT MADISON

IOWA, U. S. A.

Our English Letter.

(From Our Regular Correspondent.)

LONDON, ENG., April 7, 1884.

THE WEEK

has been a quiet one in a general way, and the position is not widely different from what it was at the date of my last letter. Trade and commerce, as a whole, are not flourishing, in the ordinary sense of the term, but the aggregate turnover is no doubt heavy, and it is not unlikely that there is more pessimism professed than is warranted by actual facts. There are branches of trade in which great dullness undoubtedly prevails, yet there are many others in which fair returns are being secured, even if on more onerous terms and with much more labor than was the case in the prosperous times of bygone days. We are doing more work for our money, but if we can still manage to secure a net 15 or 20 %, we may hope to prolong our commercial existence for many years yet to come. The old 100 or even 50 % days are of the past, but with an enlarged turnover a smaller percentage of profit may mean quite a respectable net income at the end of the year. Competition on all sides has necessarily limited the number of those who run up a fortune within a few weeks or years; but, under normal conditions, John Bull has much vitality left in him yet, and he will not fail to render a good account wherever he is allowed "a fair fight and no favor." According to our fair-trade friends, however, we are not permitted to have a fair fight; consequently, we are complaining of dullness and depression, while on all sides industries in rivalry of our own are springing up and flourishing. At the same time, and despite these drawbacks, I am one of those who believe that certain of the advantages of Great Britain cannot be overpowered or superseded, and come what may, I should be prepared to bet on the old country in the long run. If I were asked, indeed, I should be of opinion that some of our Eastern manufacturers may (or may not) have rougher obstacles to overcome even than this old Kingdom, although nobody is a firmer believer than myself in the great future of the United States. I make no allusion whatever to the tariff herein, because it seems to me that fiscal tariffs or arrangements of whatever kind play but a very small part in the operations of the great ebbs and flows of trade which we all so imperfectly comprehend at the present time. Just now, for instance, all the world is "in the dumps," so far as iron is concerned—neither the protected nor the free-trade countries differing much from each other. It is clear, therefore, that protection does not protect under all circumstances, nor does the freest of free trade avail against the course of bad seasons or overproduction. Briefly, it is abundantly plain that too much money has been sunk in almost all kinds of manufactures, and that the present bad feeling can only be alleviated by the gradual weeding out of those who have less money or less ability than their competitors. This process is now in progress and will make headway during the present year, by the termination of which we may possibly witness a nearer approach to a balance between supply and demand all over the world.

THE IRON AND STEEL INSTITUTE

spring meeting will take place in London on April 30, May 1 and 2, and not on the dates mentioned in my last week's letter. The literature of the meeting does not promise to be of other than ordinary importance. Discussions will be carried on with regard to papers read at the last meeting, and it is not probable that more than two or three new papers will be read. The Bessemer metallists of the year will be Mr. E. Windsor Richards, the well-known general manager of Bolckow, Vaughan & Co., Middlesbrough, and Mr. E. P. Martin, of the Blonnavon Works, South Wales. Both gentlemen have been zealous and successful in the furtherance of steel manufacture and deserve the rewards now promised to them. In respect of the autumn meeting of the Institute, new difficulties seem to have cropped up since my last, and the latest news is that the gathering will be held at Chester. Why at Chester I am quite unable to explain, seeing that it is a sleepy, old-world city, possessing nothing interesting in the shape of manufactures or anything else, save its cathedral, its famous old walls, and a busy railway center. It may be, of course, that Chester has been selected on account of its proximity to Crewe, where there are the large steel and engineering works of the London and North Western Railway Company, under the excellent management of Mr. Webb, who has made a high reputation for steel boilers, &c. It is also possible that Chester has been chosen because it is an easy distance from Liverpool, Birkenhead or Manchester—or (shall I say it) because it is near to some of the prettiest of the North Wales scenery. The "true inwardness" of the decision not to visit Sheffield has yet to be revealed, but it is whispered that the manufacturers of that town did not warmly reciprocate the advances of the Institute, and took no organized steps to give the visitors a proper welcome. It is also whispered that many of the Sheffielders declared they would not throw open their establishments on the occasion—indeed, one large employer in the electroplate branch publicly expressed the hope that the exclusion would be general. I feel certain that most of the manufacturers would have taken a proper and generous view of the situation—still, under the circumstances, one need not be surprised that the council of the Institute should have selected Chester.

THE IRON MARKET

is still without other than minor changes, the trade being very quiet in all directions, albeit not appreciably worse than at the date of my last report. The business doing on export accounts appears to be tolerably well maintained, but it is chiefly in respect of the commoner qualities, and runs largely on raw or partly manufactured materials. Generally speaking, however, the foreign and Colonial demand is not brisk, and the current shipments are to a great extent the outcome of the very low prices now obtaining. The home market is still dull, although the exceptionally fine weather is not without a

certain amount of benefit to a few industries, and affords promise of a good season to the farmers. It is to be hoped that this promise may be realized, and that a good harvest may at last set the great agricultural industry again on its feet. For the present the raisers of stock—lamb, &c.—are doing fairly well, and there are everywhere indications of good hay and fruit crops. At Glasgow the warrant market has been almost inanimate, the margins of the week having been of meager proportions, the closing price having been 42/1 p. ton. Shipments last week compared well with the corresponding week of 1883, but the total to date is behindhand. Despite the reduced production the quantity in store is gradually growing larger, so that the statistical position is anything but satisfactory. Of the total now in the Glasgow warehouses of Messrs. Connal, warrants are in circulation for about 561,000 tons, while of the total stored by the same firm at Middlesbrough warrants cover 54,140 tons. At Middlesbrough prices have been fairly steady on the basis of 37/3 @ 37/6 for No. 3. The official returns for March show that the total production of pig iron in that month was 216,000 tons, as against 237,000 tons in March, 1883. The number of furnaces at work was 102, as compared with 120 in the same month last year. The decrease in stocks during the month was about 5000 tons, or much less than had been anticipated. The local consumption has evidently been largely diminished, otherwise the stocks must have been lowered more than has actually been the case. On the West Coast hematite pig iron is quiet and without features to note, the general quotation for mixed lots in usual proportions being about 47/ p. ton. In the other smelting districts crude irons are dull, but numerous inquiries are about in the anticipation of the quarterly meetings. The Lillishall Company, it may be noted, have now started their new basic steel works, at which they will produce mild qualities of billets, slabs and the like. Crawshaw Brothers' steel works at Cyfarthya are also approaching completion, and will be started at any early date. For spiegeleisen and ferromanganese the call is only on an indifferent scale. As regards heavy manufactured iron, reports are anything but cheerful, many of the works in the North of England being obliged to stop for want of orders for ship-plates, angles and other kinds of shipbuilding iron.

In the wire trade one strike at Warrington is still unsettled, although the men elsewhere are working at the reduction. The demand for fencing wire is poor, and competition very keen. In galvanized iron there is no quotable alteration in values, and the majority of the producers are making short time. Ordinary finished iron is unaltered, but weak, and in but very moderate request. Pending the quarterly meetings both producers and consumers are disposed to hold back, there being an impression that the "list" houses may possibly lower marked bars by 10/ p. ton. Whether or not this course be adopted, however, it is abundantly plain that such a change would have no material effect upon the iron market in general. With the demand at its present limp condition no such variation in the prices of a class of iron which is less used every succeeding year could possess real importance. Marked bars no longer rule the market, in fact, and they are certainly no criterion of the general range of price. It is possible, of course, that any considerable reduction in marked bars might press rather hardly upon the best grades of unmarked iron for a short time, but the difficulty would speedily rectify itself, as it has done on several occasions of recent years. Meantime quotations are very irregular, and are scarcely likely to be amended by this week's gatherings. Sheets are a shade steadier, for one reason already mentioned in these columns, but the amount of business on hand is not large. Iron rails are quiet, the only sales reported being of small lots of light sections for the Colonies. Old rails are in a little better request, but stocks are low and prices nominal at about 60/ @ 62/6, f.o.b., for D. H. Heavy wrought scrap is neglected, prices ranging from 47/6 to 50/ p. ton, f.o.b., for selected lots. Freight rates are steadier, and rates are higher in some instances, owing to the difficulty of obtaining return cargoes at remunerative rates. For pig iron, by ordinary steamers from Glasgow to New York, the rate is about 6/ p. ton. By sailing vessels from the Clyde, freights for pig iron include the following: Montreal, 12/6; New Orleans, 15/; New York, 7/6; Philadelphia, 10/; Portland, 13/; Providence, 12/6; San Francisco, 20/. In respect of the British Channel ports I am advised as under by Edwardes, Robertson & Co., Cardiff: "The shipments from this channel to the United States during March show a marked falling off, and at present there is very little doing except in tin plate, and even in this there has been a very great decrease as compared with previous months. The freight market rules at 10/., 10/6 for berth steamers, but 13/6 was paid this month for coal hence to New York. For the Southern ports inquiries have ceased."

Steel remains in the same quiet state as when last alluded to in this report. There is no activity in any branch, although many houses are fairly employed. Old railway leaf-spring steel is nominal at 70/ p. ton, c.i.f., United States ports. Crop ends are scarcer, and several lots have been taken up at 51/ @ 52/6 p. ton, f.o.b., Welsh ports. Steel rails are reported a shade better, owing to the placing of several orders within the past 10 days or fortnight. The combination is said to work satisfactorily, but, so far as I can learn, it has not yet been subjected to anything like a severe test. For ordinary flange rails of 50 lb. p. yard and over the price is 24. 18/6 p. ton, and 40 lb. to 45 lb. sorts, 25. 8/6, with lighter sorts dearer and firmer in the same ratio.

SCOTCH PIG IRON

has been very quiet, closing rather in favor of sellers. The actual business doing is limited, and investors seem to be holding back from warrants quite resolutely. The number of operative furnaces is 93, as against 110 a year ago. In Connal's stores the quantity is 594,250 tons, as compared with 584,014 tons this date 1883. Last week's shipments were 2490 tons better, but there is a

net decrease to date of 9399 tons, while the importations of Middlesbrough pig into Scotland have increased by 10,079 tons.

MIDDLESBROUGH PIG IRON

has been fairly steady, on the whole, but it is anticipated that values will recede a shade at to-morrow's meeting, owing to the disappointing nature of the March statistics, which had been awaited with exceptional eagerness as a means of testing the effects of the operation of the restriction of production. I give below these figures in full. Prices are now on the basis of 37/3 @ 37/6 for No. 3, and G. M. B., f.o.b. at makers' wharves in the Tees, are:

No. 1 Foundry.....	41/4	Mottled.....	35/6
" 2 ".....	39/6	White.....	35/
" 3 ".....	37/3 @ 37/6	Refined metal.....	54/
" 4 ".....	36/6	Kentledge.....	39/
" 4 Forge.....	35/	Cinder.....	35/

The arbitration on the wages question took place on April 5th, and the award is expected within the next fortnight. The official returns of the Cleveland Ironmasters' Association for March are as follows:

Make of Pig Iron.	1884.	
	March.	Feb.
Make of Cleveland pig iron, whole district.....	140,933	149,886
Make of other kinds of pig, including hematite, spiegeleisen and basic pig iron, whole district.....	75,628	71,375
Total of all kinds, whole district.....	216,561	221,262
No. of furnaces on Cleveland pig iron at end of month, whole district.....	68	71
No. of furnaces on hematite, &c., at end of month, whole district.....	31	33
Total.....	102	104

Stocks of Pig Iron.	1884.	
	Mar. 31.	Feb. 29.
Makers' stocks Cleveland pig iron, whole district.....	209,014	214,488
Makers' stocks Cleveland pig iron, whole district.....	11,985	12,600
Pig iron in public stores: The N. E. R. Co.'s stores.....	10,307	8,547
Connal's stores.....	60,427	61,305
Total.....	291,733	296,940

Shipments of Pig Iron from Port of Middlesbrough.	1884.		
	March.	Feb.	Mar.
Shipments foreign.....	47,353	33,621	40,382
Shipments coastwise.....	32,912	31,259	34,709
Total.....	80,265	64,880	75,091

* Including 1415 tons of pig iron other than Cleveland.
† Including 1430 tons of pig iron other than Cleveland.

HEMATITE PIG IRONS are reported a shade steadier, recent advices from your market having had a tendency to encourage the hope that renewed buying from our makers may not be impossible by a contingency of the near future. For mixed lots the quotation is as given above, and makers' brands of West Coast iron are:

No. 1.	No. 2.	No. 3.
Cleator.....	49/	48/6
Lonedale.....	48/	47/
Workington.....	47/	46/6
Lowther.....	47/	46/6
Distington.....	47/	46/6
Harrington.....	48/	47/6
Solway.....	47/	46/6
Maryport.....	47/	46/6

North of England brands are:

No. or quality.	Ordinary.	Bessemer.
1.....	48/6	
2.....	47/6	
3.....	47/	
4 Foundry.....	47/	
4 Forge.....	47/	
Mottled.....	47/	

Last week's West Coast exports included 17,136 tons of pig iron and 3692 tons of rails. TIN PLATES have grown firmer during the week, although quotations are mostly as before, and the amount of business actually done may not be large. The quarterly meeting of the trade will take place on Wednesday, at Birmingham, but is not likely to be signalized by any official change in prices. Makers are generally holding out for rather higher figures, very few sales being reported at 14/9 p. box. The lowest rate is now 15/, while steel plates with coke tinning fetch 16/3 @ 16/6 for I. C. There is a good call for 14 x 20 and for 28 x 20 sizes, the latter being firmest at the moment. Charcoal tin plates are quiet at 18/6 and upward, but are evidently being pressed out of existence by steel. For tinneries there is a decidedly better demand, and several good orders are stated to have been booked. Freight on tin plates from Liverpool to New York has been advanced by 2/6 p. ton, making the present rate 7/6 p. ton.

Part of the equipment of the Greely relief expedition are a number of ice saws which consist of blades of steel from 10 to 20 feet long, 3 inches wide, 1/2 inch thick, and with teeth 2 inches long and 1 inch deep. The handles at one end are long enough for four men to get a hand hold, while a crane of iron has an eye in it to which a rope can be secured to assist in jiggling the saw up and down. It frequently happens that a crew can see an ice floe coming miles away. By sawing out a large space in one side of the floe beside which the vessel is moored or is sailing, they can make a dock into which the vessel can be warped. The two floes expend their power on each other, while the ship rides in safety in the open space. Commander Schley will not depend on the slow work of the saw in case of immediate danger from a nip between floes, but will use, for the first time in the history of the Arctic expeditions, gun-cotton cartridges for blasting out his harbors. A train of the cartridges, which are about 24 x 3 1/2 inches in size, can be laid around a space 500 feet long by 60 wide in a very few minutes. Electricity will explode the cartridges and pulverize the ice so that the vessel can steam into her harbor without difficulty. Each vessel will carry 2000 cartridges.

METALLURGICAL NOTES.

Continuous Puddling Furnace.

A new method of continuous puddling is about to be tried in England, which is known as the "Burch-Allen furnace, or system of continuous puddling or refining metals," the main object being the economical production in large quantities of malleable iron and steel of uniform quality. The complete apparatus consists of three primary sections, viz.: The main fire-grate or fire chamber; the refinery or hearth chamber, which is of very unusual length, and to which a constant rocking motion is imparted, and the balling cylinder, which rotates. The fire-grate is attached to the fore end of the hearth chamber, the floor of the latter being so arranged that the charges of molten metal, by the constant rocking motion, are made to flow to and fro from side to side, and at the same time are caused slowly to advance in regular order toward the delivery or after end of the hearth or refinery chamber, which end, by means of a gutter, is made to communicate with the balling cylinder, which is horizontally mounted to revolve on rollers, is suitably lined with refractory material and contains an internal projecting helix which extends from end to end. The balling cylinder is actuated by tooth gearing, which causes it to make one revolution while the hearth or refinery chamber is, by means of cams or otherwise, made to rock once to and fro from side to side. The crude metal, taken automatically from a ladle or receptacle constantly supplied in a molten state direct from either smelting or melting furnaces or otherwise, is fed into the receiver, situated close to the fire-grate bridge, in charges of about 1 cwt. each, one charge every time the chamber rocks over to the feeding side. When the feeding side of the chamber rises, the charge last fed in flows across the hearth of the chamber, and when the latter rocks in the contrary direction the charge returns a limited distance, but contiguous to the receiver or feeding point, and all the previously-fed charges flow across and recross the hearth chamber simultaneously in the same way, all moving on, by slow degrees, a short regulated distance, at the same time, toward the after end of the chamber, as it continues to rock from side to side. As the several charges in succession reach the far or after end of the hearth chamber, which in all cases must be before the metal falls, they run direct into the fore end of the balling cylinder, and by means of the helix are gradually transferred to the furthest end. Soon after they enter the cylinder the metal begins to stiffen and "come to nature," and in this state, as the charges are by the rotation of the cylinder caused to roll in the volute gutter formed between the threads or turns of the helix, they gradually become coherent masses, and assume the form of puddle balls, which, as they approach the far end of the cylinder, receive the final heat, and by turns fall out in succession upon the small carriages provided to convey them to the shingling hammers. When steel iron is required to be produced by this new system of continuous puddling, instead of conducting the charges in succession into the balling cylinder, they are discharged from the after end of the hearth or refining chamber into ingot molds, a certain quantity of spiegeleisen or other richly-carburized metallic substance in a molten state being first introduced, so as to become thoroughly incorporated with each successive charge of the then refined metal, just before it is delivered into the molds, where the several charges may be left to cool, or as soon as the metal solidifies may be removed from the molds, and while hot subjected to the hammering process.

Trials of Armor Plates.

On March 27, says the London Iron Trade Exchange, a competitive trial of armor plates took place on the Island of Amager, near Copenhagen. There were four plates in the competition, one of steel from the Creusot Company, in France; one plate by Marrell, Rive de Gier, in France, and two compound plates from Sheffield, one made by Messrs. Cammell & Co., and the other by Messrs. Brown & Co. These plates were each 9 inches in thickness, and were about 6 feet 6 inches long by 5 feet wide, and were attached by bolts to a wood backing 9 inches in thickness, supported by iron skin plates and frames in the rear. The guns used were the 6-inch and 10-inch rifled guns, with steel projectiles. The shot from the 6-inch gun appeared to have much the same effect upon each of the plates, the Sheffield plates showing the least penetration. The shot from the larger gun knocked the left half of the Creusot steel plate completely away, thus laying open the target, without any protection whatever from any other projectile that might be fired at it. The same projectile passed through the other plates, but was broken up by the English plates, which were not otherwise seriously damaged. It appeared as if the energy from the 10-inch gun was too great for any plate having a thickness of only 9 inches, but it was evident that the Sheffield plates proved to be the best under the exceptional conditions of the firing.

Annealing and Heating Furnace.

A patent has been granted in England for a new or improved furnace and apparatus for annealing castings and for drying and heating casting molds. This furnace consists of several furnace chambers placed one above the other in a slanting position in the form of inclined galleries, into which are introduced vessels mounted upon wheels, and having a cylindrical form suitable to the form of the chambers. These vessels contain the cast-steel goods that are to be annealed. Beneath the lowest furnace chamber, in about the middle of its length, is placed the main fireplace for heating the furnace. The furnace chambers communicate with each other by means of heat-distributing flues, but in order to obtain a still more uniform distribution of the heat in the upper furnace chambers, smaller fireplaces are arranged beneath the bottom of each chamber. The charging of the furnace is effected from its upper end, for which purpose the vessels are raised by means of a hoist, the discharging of the annealed cast-steel goods being effected at the lower end of the furnace chamber. Instead of each dis-

charged vessel a new one can be introduced at the charging mouth, and thus a continuous uninterrupted working of the furnace can be obtained. Each vessel having from the moment of its entering the furnace till the moment of its discharge a rolling movement along the bottom of the chamber, it is claimed that a prejudicial crystallization of the cast-steel goods in the vessels, which occurs when the goods are annealed in horizontal furnaces, is entirely avoided. In order to enable the flames and heat to circulate freely all around the vessels, the chambers one above the other are so constructed as to leave a sufficient space between the vessels and the walls of the chamber; for this purpose the bottoms of the chambers between the rails are hollowed out. For utilizing as much as possible the heat developed, the two upper chambers serving for heating and drying the casting molds are arranged immediately above the annealing chamber. The chamber next above the annealing chamber is provided with a separate fireplace, by means of which it can be heated in case the annealing chamber is not heated at all or does not give sufficient heat; the top part of the chamber is perforated with conduits through which the flames and heat are conducted into the innermost chamber.

Basic Process in Scotland.

From a recent issue of the Glasgow Gazette we take the following description of the Basic Steel Works, now in course of erection by the Glasgow Iron Company: The blast furnaces, three in number, are close-topped, and have been so almost since the commencement of the successful attempts made in Scotland to collect and economize the furnace gases. Their weekly make of pig iron is about 200 tons each, or 600 tons in all. The Glasgow Iron Company have extensive deposits of clay-band and black-band iron ores, which they intend to use in providing metal for conversion into steel in the Bessemer vessels; but they do not intend to depend exclusively upon these ores for the production of basic metal for the converting process. They are especially fortunate in having an extraordinary stock of highly phosphoric material in the shape of tap and mill cinder, which has been allowed to accumulate in their hands for the last 30 years or so—a sort of waste material at their finished iron works at St. Rollox and Motherwell. The senior partner of the firm, Mr. Robert Cassels, always looked upon this cinder as a commodity that would ultimately be turned to account for the large proportion of metallic iron contained in it, and, therefore, he would not allow it to be disposed of as waste like blast furnace slag. Sometimes it has brought as much as 4/6 per ton in the open market, for use in blast furnaces, but of late it has not been considered worth more than from 2/ to 3/ per ton. When it is borne in mind, however, that it is very rich in phosphoric acid, it will at once be seen that such a raw material will be of great value, particularly since there is a stock of probably from 150,000 to 200,000 tons to commence operations upon.

Another most important matter is the exceedingly small quantity of sulphur present in the cinder. It exists exclusively in the form of sulphide of iron, of which compound the range is from .35 per cent. in mill cinder to .70 per cent. in tap cinder. During the last six months the business of planning and laying out the necessary works and devising the kind of machinery, &c., that it might be deemed advisable to lay down for successfully working the process, has received attention. The Bessemer shop, whose site is on the other side of the railway from the blast furnaces, and distant from them some 300 feet or so, will cover an area roofed in by four bays, each of 45 feet span, and one of 70 feet span, and having a length of 150 feet. There are to be three Bessemer converters, each of 8 tons capacity, one of which will usually be kept in reserve. The casting-pits in connection with which they are to be worked are two in number, semicircular in form and combined at their inner terminals, their radius being in each case 25 feet. For working the converters a horizontal blowing engine is being made, the fly-wheel of which will be about 20 tons weight and the speed about 40 revolutions per minute. A considerable amount of the plant is being made on the ground by the Glasgow Iron Company, or at their Motherwell works. For providing steam some 10 boilers are to be laid down, all constructed of basic steel, and having a working pressure of 80 pounds per square inch. It is probable that at least £30,000 will be spent in carrying out the plans that have now been resolved upon for the Glasgow Iron Company's Basic Steel Works.

India-Rubber Imports.—According to a New York importer of india-rubber, and from the india-rubber statistics which we have gleaned from various sources, says Iron, it appears that there were imported in 1883 into the United States 21,625,000 pounds of rubber. Of this amount 11,616,000 pounds came from Peru, and the remainder from Central America and Africa. These figures show a falling off of 2,542,000 pounds from imports of last year. The total consumption of the world for the last year was 32,000,000 pounds. The total stock in the world January 1 was about 14,000,000 pounds. The closing of the rubber factories until June 1, of course, had considerable influence in depressing the price of crude rubber. Speculators succeeded in driving up the price in 1882 to \$1.20 per pound. When the break came it fell to 75 cents, and remained near that figure for some time. The manufacturers have now worked off nearly all their surplus stock of goods, and are looking forward to a prosperous season this year.

A window-glass factory is to be erected at Massillon, Ohio, by A. L. Wetherald and S. R. Wells, of Bellaire. The gentlemen will be given a deed of the old Volcano Furnace property, which embraces the buildings thereon and 17 acres of land, the cost of which was \$15,000. The citizens donated them \$7500 of the purchase money, and the company will build an 8 or 10 pot furnace, investing about \$60,000 in buildings and stocking the establishment. Both gentlemen are at present interested in the Bellevue window-glass works. This will make the third glass-manufacturing establishment in Massillon.

[Faint handwriting]

Oldford Agricultural.....	dis 70 & 81
Bemis & Call's Patent Combination.....	dis 38
Bemis & Call's Merrick's Pattern.....	dis 38
Bemis & Call's Bridge's Pattern.....	dis 38
Bemis & Call's Cylinder or Gas Pipe.....	dis 38
Allen Focket (Bright).....	\$5.00 dis 38
The Favorite Focket (Bright).....	\$5.00 dis 38
Webster's Patent Combination.....	dis 25
Taylor's Farmers.....	dis 25
Agricultural Wrenches, Eberhard.....	dis 34
Wringers.	Per doz.
Novelty Nos. 2 and 3 1/2.....	\$15.00
Novelty Nos. 3 and 3 1/2.....	37.50
Universal. No. 2.....	34.00
Universal. No. 3.....	34.50
Excelsior E.....	42.00
Excelsior F.....	48.50
Adams & Co. No. 2.....	33.00
Peerless No. 3 1/2.....	33.00
Peerless No. 3 1/2.....	37.50
Metropolitan No. 2 1/2.....	34.00
Metropolitan No. 2.....	34.50
No. 99 Improved 2 1/2.....	35.00

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Moisture should not be allowed to penetrate the laps or joints, as it will dissolve the cement and cause the laps to come apart."

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 G. D. Barr, Buffalo, N. Y.
 E. B. Preston & Co., Minneapolis Minn.
 Post & Co., Cincinnati, Ohio.
 J. B. Hoyt & Co., Chicago, Ill.
 Langlois & Son, Racine, Wis.
 Laurence & Herkner, New York.
 Barnum Bros., Troy, N. Y.
 Brown Bros. & Co., Providence, R. I.
 Jas. H. Billington & Co., Philadelphia, Pa.
 Davenport, Johnson & Co., Atlanta, Ga.
 Covel & Osborn, Fall River, Mass.
 J. Ashton & Son, Trenton, N. J.
 Geo. A. Smith, Richmond, Va.
 W. H. Dillingham & Co., Louisville, Ky.
 E. B. Preston & Co., Chicago, Ill.
 Cameron & Barkley, Charleston, S. C.
 Towner, Landstreet & Co., Baltimore, Md.
 C. E. James, Chattanooga Tenn.
 C. B. Choate, East Saginaw, Mich.
 E. G. Studley & Co., Grand Rapids, Mich.
 Mantle & Cowan, Louisville, Ky.
 E. F. Bradford & Co., Cincinnati, Ohio.
 The J. LeRoy Pine Co., Troy, N. Y.
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INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

The Nashua Lock Company are contemplating extensive improvements the present season, which will double their facilities.

MASSACHUSETTS.

The following officers of the Gosnold Mills corporation, at New Bedford, have been elected: President, George Wilson; secretary and treasurer, John A. Bates; directors, George Wilson, George F. Kingman, Atwood Holmes, William G. Taber, Jereh Swift; superintendent, Henry Howard. Mr. Swift was elected director in place of Captain Joseph H. Cornell, who declined re-election on account of ill health.

The accident to the machinery of the Old Colony Iron Company, at Somerset, on the 12th inst., was not serious. Only the rocker arm of the engine was broken. Repairs were made and everything running full again by last Monday morning.

RHODE ISLAND.

A building owned by the Rhode Island Tool Company, Providence, and leased to the Household Sewing Machine Company for jannanning purposes, was partially burned on the 18th inst. Insurance on the building, \$5,000, and on the stock belonging to the Household Sewing Machine Company, \$7,000. These amounts, it is thought, will fully cover the losses.

CONNECTICUT.

The Putnam Foundry and Machine Corporation have a capital of \$20,000, with stock all sold. They will erect at Putnam a foundry 50 x 100 feet, and a machine and wood-working shop 30 x 100 feet, two stories high. The president is Orrin Morse; vice-president and general manager, D. H. Billings; secretary and treasurer, W. R. Barber.

NEW YORK.

A wire mill is to be erected on 118th street, near Avenue A, New York City, by Wolff, Kahn & Co. The mill will be located near the East River.

NEW JERSEY.

It is reported that the stove works of Buckwalter & Co., of Roysersford, Montgomery County, Pa., are to be moved to Elizabeth. This is done in order to avoid the hands lately employed at the works, who intimidate all workmen taken on since the strike.

PENNSYLVANIA.

The old Snowdon Works, at Brownsville, Fayette County, have been leased by Jacob Graser, A. J. Isler and John L. Snowdon, and will be run as a general machine and car shop, with steamboat machinery as a specialty. The works are very conveniently situated for this latter branch.

The rolling mill, pipe mill and sheet mill of the Reading Iron Works are still idle, but many of the men think they will resume this week.

Some slight trouble has been experienced with the employees at the works of the Pennsylvania Bolt and Nut Company, at Lebanon, but affairs are again running smoothly.

Maiden Creek Furnace, at Lenhartsville, the property of Jacob K. Spang, has been blown out for the purpose of putting in a new hearth and making some other necessary repairs.

The New York and Pennsylvania Coal, Iron and Coke Company, with a capital of \$3,000,000, was chartered this week. Its headquarters will be Johnstown.

The Greenwood Rolling Mill, at Tamaqua, has been abandoned, and will be dismantled.

Elmer Reed, superintendent of the Wheeler Iron Company's furnaces, informs us that, owing to the lining giving out, the Fannie Furnace will have to be blown out for repairs in a very few days. The other furnace, which has been banked up during the last few months, he thinks is past recovery, and will have to be shovelled out before anything can be done.—*Sharon Herald*.

Buckwalter & Co., proprietors of the Continental Stove Works, Roysersford, whose molders have been on a three-months' strike, have leased a foundry at Elizabeth, N. J., where operations will be continued with new hands. The firm are determined not to submit to the strikers, who are charged with intimidating molders who were willing to work.

The Shenango Machine Works have secured the exclusive agency for and right to manufacture Brown's patent automatic skip, for filling blast furnaces. Its use is a matter of great economy in working, and it is rapidly taking the place of the old way of filling furnaces.

The Hollidaysburg Standard says: "The nail factory, of McLanahan, Smith & Co., which has been idle for several months, has again been put in operation. All the nailers who left in consequence of the suspension of work some time ago have returned."

The charter of the Connellsville Gas Coal Company has been renewed. The company are not now actively engaged in business, having sold their Trotter plant to the H. C. Frick Coke Company, but they still own the Morrell and Wheeler property, which is leased for 20 years by the Cambria Company.

The West Lebanon Rolling Mill Company, Limited, have purchased the Harrisburg Chain Works, and will remove the entire establishment to Lebanon. About 50 hands will be employed.

The miners employed by the Westmoreland and Penn Gas Coal companies, at Irwin Station, about 1500 in all, are still on a strike. Their only objection now is a 1/4-inch change of screen.

The changes at the plate mill of the Pottstown Iron Company are about completed, and the mill now ranks third in the United States for the manufacture of wide plate iron. The rolls are 112 inches wide. Formerly they were 72 inches. There is a mill at Pittsburgh with rolls 115 inches wide, and one at Baltimore perhaps wider. The machinery has been started and found to

run satisfactorily, and the mill will be started soon. Rumor has it that the same company will soon begin the erection of another mill, east of their present works, for the manufacture of bar and bridge iron.

The American Works, 72 ovens, on the Southwest Pennsylvania Railroad, near Stonerville, have been purchased by the H. C. Frick Coke Company. The price paid was \$79,500. The works have been idle for some time, but will now be repaired and started up. The sale settles a couple of big lawsuits now pending.

The Scranton Steel Company exhibit at their New York office, No. 56 Broadway, a specimen of a 70-pound steel rail, which was subjected to a very severe test. A ball weighing 2240 pounds was dropped 55 feet on this rail, which rested on bearings 3 feet apart. Though the rail bent under this heavy blow, there is not the sign of a flaw about it. The carbon in this rail is 0.37 per cent. The usual rail test is a ton weight dropped 17 feet. A comparison of such a test with the one actually made will show the unusual strength of the Scranton rail.

Reports received at Reading on the 15th inst. from points along the East Pennsylvania Railroad between Topton and Allentown, where great destitution has prevailed among the miners, indicated that work had been resumed in many mines, and that the remainder were preparing to go in operation. More confidence prevails among the working-men, who anticipate better wages and steadier work. There are about 800 miners in the district, many of whom have been working on half time at the rate of from 60 to 75 cents per day.

PITTSBURGH AND VICINITY.

Pittsburgh iron works experienced quite a scorching last week, small fires occurring at the Wayne Iron Works of Brown & Co., the Solar Iron Works of Wm. Clark & Co., and at the scrap iron yard of Koehler & Co., the latter blaze being communicated several times to Hussey, Howe & Co.'s mill.

DELAWARE.

The plate-iron manufacturing concern of Seidel, Hastings & Co., of Wilmington, was dissolved on March 31. The Seidel & Hastings Company, a corporation of the State of Delaware, having purchased from Messrs. Seidel, Hastings & Co. the stock, property and assets of the Wilmington Plate Iron Rolling Mills, will hereafter conduct the business of the same.

MARYLAND.

The Beall Engine, Boiler and Machine Works, at Cumberland—Merwin McKaig, proprietor—are running with a full force of hands. They are very busy on Mr. McKaig's improved "Mogul" horizontal stationary engine, the new Keystone roller mill and the Anderson self-lubricating mine car wheel, as well as pulleys, shafting, mill machinery and gearing. The "Mogul" engine has been recently put on the market, and ranges from 10 to 100 horse-power. The Keystone roller mill is also new, and has many valuable improvements, its popularity being indicated by receipts in one day of orders for 11 of them. The Anderson mine wheel has been on the market a little over a year, and has given such excellent satisfaction that one coal company have ordered over 500 wheels, claiming that they save 75 per cent of oil.

OHIO.

The report that the Crafts, Bessie and Winona furnaces are to be removed to Buchtel from their present locations is pronounced premature by the Columbus and Hocking Coal and Iron Company, who are the owners of these three furnaces, together with the Akron and Gore furnaces. The question of bringing these furnaces together at some favorable point in the Hocking Valley has been under discussion, but no definite conclusion has been reached as yet. For some time to come they will be operated at their present locations.

C. E. Harlan, of Woodsfield, has purchased, with others, the rights granted under Hoyt's patent for warehouse trucks. The trucks made under this patent are very convenient machines. The feature of novelty consists in an elliptical metal band which moves on pivots, set in the side of the truck a few inches forward of the legs, and which is so constructed that by the movement of a lever which is a continuation of the elliptical band below the right side of the truck it will embrace the box, barrel or other burden and hold it firmly in place. There are notches or slots in the sides of the truck by which, when the elliptical band is not in use, it may be dropped down below the level of the surface of the truck, and so be out of the way. The sides of the truck are connected by cross-pieces to accommodate barrels, round stoves and other curved objects. Movable teeth are fastened by bolts to the forward cross-pieces, which are designed to fasten themselves into the curved burdens, and which can be removed for the purpose of sharpening. By means of catches forming part of the forward cross-piece, square burdens can be held in place.

The Globe Ship Building Company, of Cleveland, have under way an iron freight steamer of exceptional size, having 261 feet length over all, and 37 feet beam.

The Sydney Steel Scraper Company, of Sydney, were unable to keep up with their orders for both wheel and drag scrapers during the season of 1883, and have been running full force of hands all winter to meet the demands of their trade for 1884.

Central Furnace of the Cleveland Rolling Mill Company, which blew out December 17 last, resumed operations April 1, Master Henry Chisholm, son of Mr. W. B. Chisholm, applying the torch. The furnace is now making about 150 tons per day, but will soon materially increase the output.

ILLINOIS.

The Defiance Brake Shoe Company, of East St. Louis, were incorporated this week to manufacture and deal in Simonds's patent brake-shoe and other railway supplies; capital stock, \$100,000; incorporators, J. H. McLean, Arch J. Robertson and Charles H. Dishman.

A. M. & D. Gibson, of Chicago, will move into more commodious quarters May 1. They

are now busy on a number of improved drill presses.

The Gates Iron Works, of Chicago, will take possession of their new factory May 1.

The Western Stove Works have been organized at Peoria; incorporators, H. F. Ossenbeck, Jr., John W. White and J. F. Ossenbeck; capital stock, \$6000.

The Smith & O'Leary Steam Hammer Forge Works, of Chicago, are being run to their full capacity in order to meet the demand for vises, artesian-well tools and other forgings. Fifty men are employed.

The machine-shop outfit of the Prosser Twin Cylinder Car Company, consisting of lathes; planers, drill presses, vises, &c., has been purchased by Robert Tarrant, proprietor of the Marine Engine Works.

The Illinois Iron and Bolt Company, of Carpentersville, propose extensive improvements in their works this season. Another large water-wheel will be put in, and to accommodate this the flume will be enlarged. The grinding and polishing departments will also be torn down and remodeled. The worn head-gates will be replaced by new ones, and the race-bank between the works and the dam for about half a mile will be strengthened. The company have recently put in a milling machine and have added largely to their equipment in both tools and machinery. The cupola at these works has a capacity of about 17 tons per hour. The works are running full time in all departments, 100 men being employed. The company have recently sent a large number of copying presses to Genoa, Italy, and Rangoon, Burma. During 1883, 7500 tons of iron were worked up into copying presses, thimble screws, jack-screws, blacksmiths' tools, sadirons, &c., at these works.

The losses by the burning of the Peoria Plow Works, on the 16th inst., are \$60,000 on the building and \$30,000 on the stock. The total insurance is \$45,000.

INDIANA.

The Woolley Locomotive Electric Light Company, of Indianapolis, and the Ohio Power and Light Company of Dayton, Ohio, have consolidated, and on the 15th inst. perfected an organization to be known as the American Locomotive Electric Headlight Company. The capital stock is placed at \$6,000,000, and the following directors were elected for the first year: Louis Miller, J. A. Long, E. L. Buckcock, of Akron, Ohio; Leonard Moore, J. W. Carpenter, J. W. Stoddard, of Dayton; Geo. N. Wheeler, H. H. Fulton, M. N. Lynn, Indianapolis. This company control the Lynn and other valuable patents, and will at once begin the manufacture of electric headlight apparatus. Some of the directors are millionaires, and apparently there are ample means at the company's disposal to begin operations on a large scale.

MISSOURI.

The extensive additions made to the mammoth iron works of Shickle, Harrison & Howard, at St. Louis, are about completed, and will require the employment of 400 additional workmen.

The corporate name of Buck's Stove Company, of St. Louis, has been changed to Buck's Stove and Range Company. They resumed operations on the 15th inst. with about half force.

The Laclede Car Manufacturing Company, of St. Louis, are erecting an addition to their works, 60 by 118 feet, in order to increase their manufacturing capacity.

The St. Louis Wire Mill Company are about purchasing a process for making wire without annealing, pickling or washing, thus saving fuel, labor and money.

The Midland Blast Furnace Company are tearing down their furnace in Crawford County, and will erect a new one with a view to improving their No. 1 foundry iron. The new furnace will be put in blast in about a month or six weeks. It will be in every particular exactly like the old furnace, which was erected in 1877, a peculiarity of which was that it was composed wholly of fire-brick. The old furnace was worn out from seven years' continuous use, having been out of blast in that time only long enough to make slight repairs.

MICHIGAN.

The charcoal kilns at the Iron River Furnace location are nearly completed, and the work of making coal for the new furnace will soon begin. The managers of this enterprise are displaying great energy in pushing it along, regardless of the unpromising state of the charcoal iron market. It would be a happy circumstance for their project if an improvement in prices should occur about the time their furnace is ready to go into blast. Such a stroke of good fortune is not wholly improbable.—*Marquette Mining Journal*.

WISCONSIN.

The Dennett Harvester Company, Limited, of Milwaukee, have filed amended articles, increasing their capital stock from \$250,000 to \$500,000.

NORTH CAROLINA.

The Marshall Foundry Company, Hickory, have been organized for the purpose of making castings, machinery, &c.

KENTUCKY.

W. C. Kelly & Co., of Louisville, are running their works to their full capacity, with orders booked to keep them busy for nine months. They have recently organized into a stock company, with a capital of \$100,000, Mr. W. C. Kelly, who is president of the company, owning \$70,000 of the stock, and the balance being owned by M. J. P. Kelly, secretary of the company. The works have lately been greatly enlarged, and many valuable improvements in machinery adopted, which make it one of the most complete works of the kind in the country. They employ 150 men, and turn out about 2000 axes and hatchets daily.

The Lock and Hardware Manufacturing Company have been organized at Lexington.

B. F. Avery & Sons are about building another plow factory at Louisville.

The strike at Swift's Iron and Steel Works, at Newport, was ended on the 16th inst., the

men resuming work on their employers' terms.

TENNESSEE.

The Knoxville Car Wheel Company are running extra time to fill large orders for wheels.

The Wason Car Works, Chattanooga, are increasing the supply of machinery.

The Southern Machine Company, of Bedford County, have been chartered.

The Knoxville Ice Factory is to have a new building with requisite machinery, costing \$20,000.

The Lagrange Iron Company are building a new furnace at Lagrange, which is to take the place of the old one. The stack will be 65 and the bosh 12 feet, and the furnace will be used in connection with two hot ovens and two blowing engines. It will be put in operation some time in June, and will turn out daily about 50 tons of choice hot-blast foundry irons.

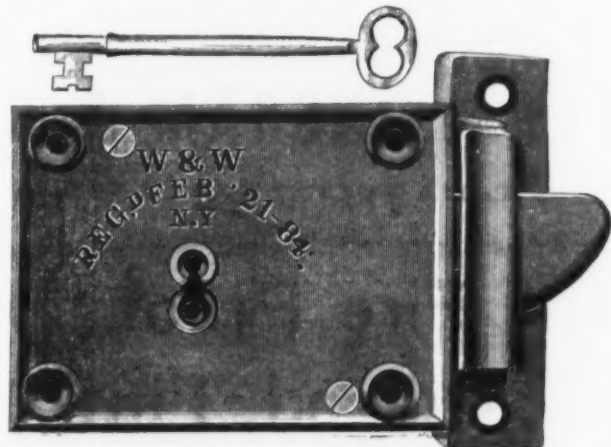
The improvements made by General Wilder, of Chattanooga, in his turbine water-wheels in the last two years have created such a demand for them that he has recently erected works especially for their manufacture, which will be in full operation by May 1, and will be known as the Wilder Machine Works. The machine shop is 50 x 150; foundry, 50 x 80; blacksmith shop, 30 x 40, and warehouse, 30 x 40. The entire plant is fully equipped with all the modern improved machinery, with hoisting and running cranes, and every convenience for handling the wheels with the greatest economy. Orders are now on his books for the entire capacity of the works for the next four months, and, while some inquiries have been received from Northern States, up to the present time his entire capacity has been absorbed by orders from Kentucky, Tennessee, Georgia, Alabama and the Carolinas, to run the smallest cornmill up to some of the largest cotton mills that are now being erected in the South.

COLORADO.

It is reported that a company with \$20,000 capital is to be formed in Denver for the manufacture of white lead. On account of the saving in transportation it is estimated that the white lead can be manufactured at Denver for about \$3.25 less than the present ruling car-load Eastern prices. The principal persons interested in this scheme are George L. McQuown, Samuel Brown and E. J. Lope.

Sliding Door Lock and Latch.

Williams & White, Flushing and Nostrand avenues, Brooklyn, and 116 Chambers street, New York, are known to the trade as manu-



Sliding Door Lock and Latch.—Half Size.

facturers of the rim barn-door lock—Nos. 133, 134 and 135 in the catalogue—improvements in which they have recently made, as represented in the accompanying illustration. This new lock and latch combined is numbered 0133, 0134 and 0135, and is described as a heavy reversible, rim, Janus-face, sliding door lock and latch combined, adapted for carriage-houses and barn doors, also railroad depots or gateways. The special points in this lock which are mentioned as improvements over the former style, and some of which are decidedly novel, are the following: 1. It will be perceived that the lock has a double key-hole, so that the key can be inserted in two positions; and the special feature to which they direct attention is that it is so constructed that the latch can be locked by putting the key in the key-hole upside down and turning it, while by putting the key in right side up and turning it the latch is simply lifted. The point is made that by this contrivance a special security is attained for doors that run on rollers or hangers. 2. The lock is reversible without removing the cap, both sides being alike. 3. The strike is made beveled, so that in case the door sways the latch will slide in, instead of receiving the violent shock that would result from striking on a square slide. 4. While their former lock was made with a brass key somewhat heavy and cumbersome, this lock is made with a neat key of polished iron. It is the intention of the manufacturers to discontinue making the former style and furnish this article in its place. Information with reference to prices may be obtained from our Trade columns.

The wonderful growth of our internal commerce within the last 50 years is shown by ex-Governor Seymour in a recent letter, as follows: "The tonnage of the Erie Canal in 1843 was about 1,500,000 tons. This included all local as well as through rates. After that the State allowed the roads running parallel to the canals to carry freights free from any charges for tolls, which at one time they were subject to. At present there are seven or eight railroads in New York and other States competing with the water routes and carrying annually over 70,000,000 of local and through tonnage, yet the tonnage of the Erie Canal is nearly four times as great as it was in 1843, when with the Hudson River and the Great Lakes it made the only through channel of commerce be-

tween the seaboard and the Western States. There is no reason why this rapid increase of tonnage will not continue hereafter; if it does, our present canals and railroads will not be able to meet the demands upon them."

The New Orleans Exposition.

Favorable progress is being made in the preparations for the international exposition to be held in New Orleans, for which subscriptions have been made in this city to the amount of \$1,000,000. Director-General Burke reports as follows:

"Plans for the main building were opened to general competition. The building is handsome and commodious, being 1375 feet in length and 905 feet in width, affording 1,300,000 square feet of floor space, with convenient apartments attached for police, fire department, public comfort, offices, meeting rooms for various national organizations, and with a central musical hall capable of seating 11,000 persons, and a machinery hall 1375 feet in length by 250 feet in width. The main building covers 32 acres of ground. Two hundred and fifty thousand square feet of space have been reserved in the center of the building for foreign governments, and an equal amount for the United States Government and collective exhibits of the States and Territories.

"The applications for space from foreign and United States exhibitors, eight months before the opening of the exposition, call for about 900,000 feet of exhibition space. Hence, although the exposition building is the largest ever erected except that of London, it is found inadequate to meet the demands. Eleven foreign governments have indicated their intention to participate, and I have been informed that many others have only delayed official action, awaiting information as to the progress of the preparations and importance of the event. Twenty-four States and Territories have applied for space, and I am informed that the delay in other States is due to the time of assembling of their respective Legislatures, and to the fact that in some cases no session of the General Assembly can be held until after the date fixed for the opening of the exposition. In many of such cases the people of the respective counties are perfecting local organizations, and raising the funds to secure a display of resources of their State by local contributions.

"The railroads of the country have responded to our request for low rates on freight and passengers in the most generous manner. One hundred and fifty lines of railroad have agreed to a maximum rate on passengers of 1 cent per mile, and the ex-

American Institute of Mining Engineers.

The following circular relative to the forthcoming meeting of the Institute has been issued:

"The next meeting of the Institute will be held at Chicago, beginning Tuesday, May 27. The following programme is provisionally announced: Tuesday evening, opening session; Wednesday, excursions to South Chicago and Pullman; Wednesday evening, session; Thursday, excursion to La Salle and other points; Friday morning and afternoon, sessions; Friday evening, banquet. The hotels in Chicago will probably be crowded, and members desiring hotel accommodations should write at once to Mr. John Crerar, Jr., 109 Dearborn street, Chicago. Headquarters will be at the Grand Pacific Hotel. Board, from \$3 to \$5 per day, according to rooms. Members expecting to attend the meeting should notify the secretary (box 223, New York P. O.) at an early day. Arrangements as to railway facilities, &c., will be hereafter communicated to those who have so notified the secretary."

A Hamburg correspondent of the *British Trade Journal*, commenting upon the state of German industry, says that, while in England the increase of the production of pig iron from 1877 to 1882 was 23.3 per cent., it rose in Germany at the same time 83.3 per cent.—from 1,703,000 tons in 1877 to 3,171,000 tons in 1882. On the other hand, the exports show a considerable decrease. From January to November (11 months) the export figures were as follows:

	1883, kg.	1882, kg.
Iron rails	159,992,000	199,127,500
Ironware	187,712,900	307,086,300
General hardware	14,726,900	17,046,800

A telegram from New Orleans states that at a meeting of the Grand Council on the 15th inst. all mechanics belonging to unions employed in building were ordered to cease work until further notice. Heretofore carpenters and other mechanics have continued work when paid \$3 per day, the wages demanded by the strikers, but the order indicates a change of policy. They want none but union men employed, and the strike is made general until the bosses come to terms.

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Boston Hardware and Metal Prices. 44

The celebration of the first anniversary of the apprentices' night school at the Brooks' Locomotive Works was held recently and a number of prizes were distributed to those of the students who had been specially proficient in the different studies pursued. We need scarcely refer to the importance of Mr. Brooks' works in attempting to improve the general standing of mechanics, its growing appreciation being aptly demonstrated by similar efforts made in different parts of the country, and which, we are pleased to note, are all meeting with well-deserved success.

The Webster aluminium patent, which has been making considerable noise in the newspapers, is pronounced more complicated than existing methods for manufacturing alumina, and it starts with a manufactured product—alum—likely to cost more than other natural sources: bauxite, for instance, from which alum is made. It is possible that the Webster patent has merits, but it appears to be tolerably clear that what is known of it is not new, and what is said in its praise is not true. A great prize will be drawn by the man who makes cheap aluminium, next to iron the most useful metal known in its possibilities, but Mr. James Webster does not seem to be the man who has made the discovery.

Mr. E. F. Lufkin, of Cleveland, Ohio, is about to erect a factory at South Chicago, Ill., for the manufacture of rules, which are used very extensively in the lumber business. The factory, which will be 40 x 80 feet, will employ some 25 skilled workmen and be fitted with six machines at the start.

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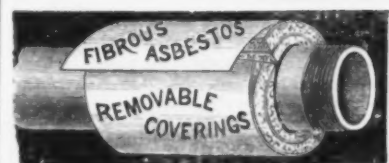
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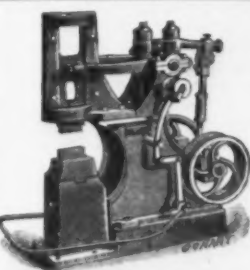


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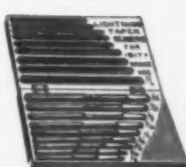
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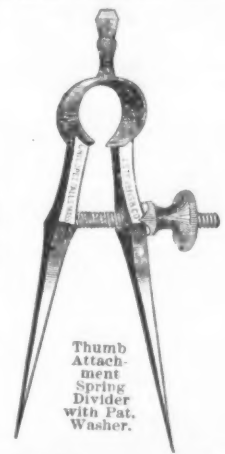
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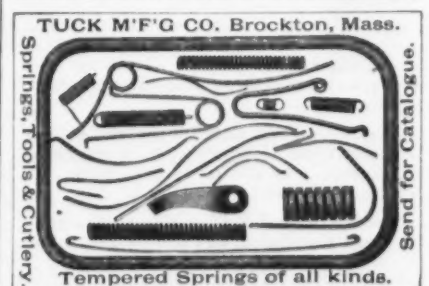
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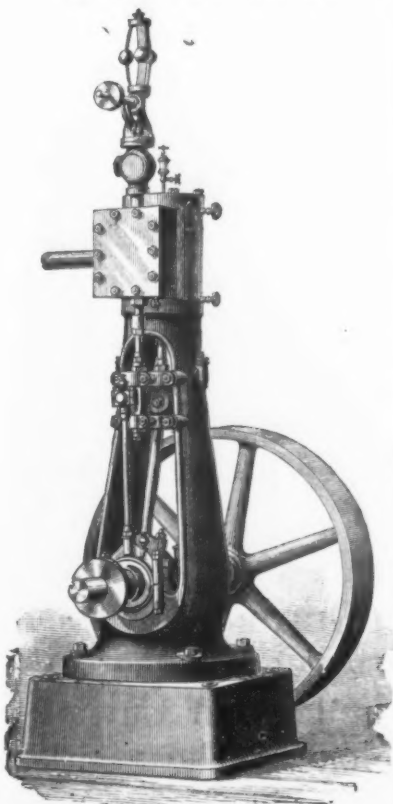


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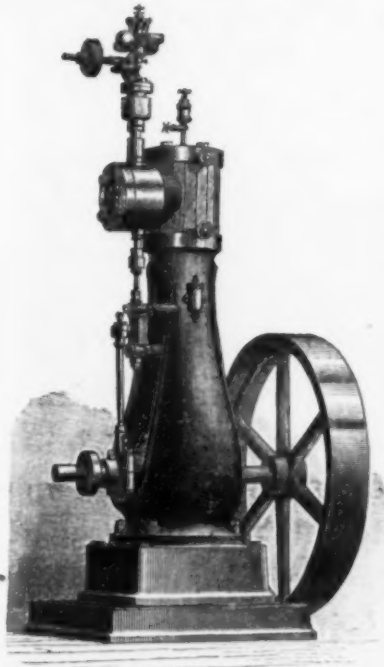
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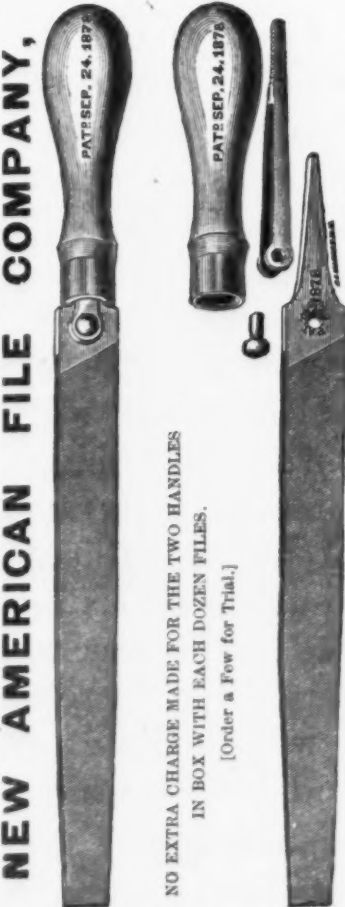
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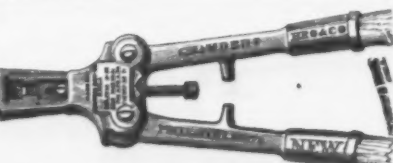
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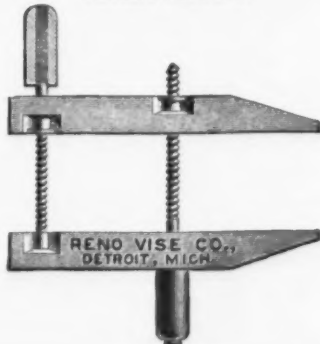
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Trout's Patent Adjustable Beading, Rabbet and Slitting Plane.

A short description of this article might be—"a half-chest full of tools, all in one;" for, as our ancestors made up kits of tools, a good-sized chest would have been required to contain the full variety embraced in this single tool, viz., 1, beading and center beading plane; 2, rabbet and filletster; 3, dado; 4, plow; 5, matching plane; and 6, a superior slitting plane, the whole being accompanied by seven beading tools (1/8, 1/16, 1/32, 1/64, 1/128, 1/256, and 1/512 inch), nine plow and dado bits (1/8, 1/16, 1/32, 1/64, 1/128, 1/256, and 1/512 inch), a slitting tool and a tonguing tool.

Perhaps no better understanding of the numerous features of this one plane can be had than by giving herewith a copy of the directions for its separate uses issued by the manufacturers. These will be clear to the reader if he refers to the annexed engraving as he reads:

Dado.—Insert a bit of the required width in the main stock, bring the sliding section of the stock snugly up to the left edge of the bit, and secure it on the arms by the brass thumb-screws. The deep gauge will serve best if placed at the left hand on the sliding section of the plane.

Rabbet and Filletster.—Insert bit as above, attach the fence to the arms by the upper holes in the same, and thus regulate the width to be cut. Use the depth gauge on right-hand side of the main stock.

Beading and Center Beading.—Insert beading tool in place of the bit, and otherwise use the plane in same form as for rabbet. For center beading the fence may be adjusted to allow of making a bead 5 inches inside from the edge of a board if desired.

Matching Plane.—Insert the tonguing tool and use the plane in the same form as before. The depth of the tongue may be easily regulated by use of the brass gauge attached to the cutter. Boards varying from 1/4 to 1 inch in thickness can be matched in the center. The 1/4-inch plow bit is used for grooving.

Plow.—Insert a bit of the required width, and attach the fence to the arms by the lower holes in the same. In using bits less than 1/4 inch in width, remove the sliding section of the plane from the arms.

Slitting Plane.—Insert the slitting blade into the slot on the right side of the main stock of the plane, and just in front of the handle, placing the steel depth gauge on the same spindle, and fasten the whole by use of the brass thumb-screw. In assembling the plane always insert the arm with the longest screw-thread nearest the handle, thus making a spindle for receiving the slitting blade on the right-hand side of the main stock. The peculiar form of the spurs in the base of the two sections to the plane gives three separate points which are interchangeable, or, if no spur is needed, all three of them can be withdrawn. Except for working across the grain the spurs need not be used.

The addition of a slitting blade to a tool of this character will be appreciated by carpenters who cannot have the use of circular saws in getting out window-stops and such other thin stuff as they need. The top of the slitting blade appears just in front of the handle in the engraving, and it is claimed that its position is such that great execution can be done with a moderate outlay of strength.

These tools are made by the Stanley Rule and Level Company, New Britain, Conn., who mention that by the use of special and approved machinery the greatest possible precision has been attained in the manufacture, and the working parts, being of metal, are all interchangeable. The tool is known in the trade as Plane No. 45, the retail price of which is \$8.

The Needs of the Navy.

The following letter from Admiral Simpson, chief of the Advisory Board, is of interest as showing what kind of armored ship the Board thinks of:

NAVAL ADVISORY BOARD,
WASHINGTON, April 11, 1884.

The Hon. William E. Chandler, Secretary of the Navy.—SIR: Referring to the debate in the Senate on the amendments to the Naval Appropriation bill objection is raised by some Senators to granting additional vessels for the navy, on the ground that the cruisers asked for are not of such fighting quality as to match armored vessels of other nations, the inference being that if a bill were presented for the construction of an armored vessel it would meet with their approval.

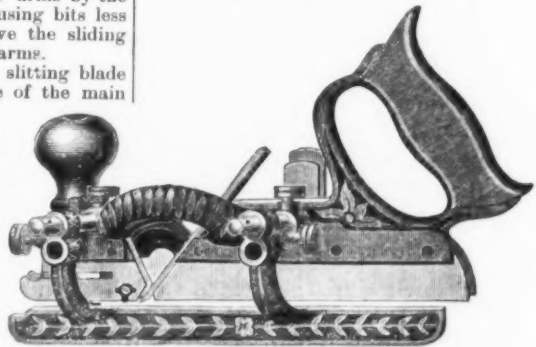
The first Advisory Board was fully sensible of the need of armored vessels for the navy, but in consideration of the great need of cruisers to carry the flag abroad it recommended as the first step in "rehabilitating the navy" the construction of vessels to supply this the most pressing want of the service. Construction of armored vessels was confidently expected to follow in due order after a sufficient number of unarmored vessels should have been built to form a cruising force. It seems apparent that the building of armored vessels and of unarmored vessels was not proposed to be carried on simultaneously from a disinclination to call for very large appropriations.

For the purpose of conforming to the implied desires of Senators for armored ships, and from the fact that there is no doubt of the need of them, I respectfully recommend that the programme laid out by the first Advisory Board be so far departed from as to admit of having one armored vessel under construction constantly, even while the work of providing cruisers is in progress.

The length of time required for such constructions is from three to five years. They are very costly and will involve much study and careful preparation; besides, the selection of a type will be a matter requiring much deliberation. In relation to the last point—the selection of a type—I submit general dimensions and some particulars of two armed vessels which represent the most advanced ideas of the present day. One of

these would most probably be the character of the vessel that would be recommended by such a body as the Advisory Board.

Her Britannic Majesty's steamship Imperieuse, not yet completed, was commenced in 1881. She is called an armored cruiser, and is intended for service on foreign stations where fast unarmored ships may have to be opposed and where second-class iron-clads may have to be engaged. Her dimensions are as follows: Length, 315 feet; beam, 61 feet; draft, 25 feet; displacement, 7400 tons; indicated horse-power, 8000; speed, 16 knots. The battery will consist of four 9.2-inch guns, each mounted in an armored barbette, and six 6-inch guns in broadside. The barbettes are arranged one forward, one aft and the others abreast of each other at the sides amidships; the heavy guns are thus situated at twice the height from the water that they would be in a turreted ship, and can be fired three together in any direction. The speed and armament here described does not greatly exceed that of the Chicago, but the difference in displacement of 2900 tons admits of the following armor: Throughout the length occupied by the machinery and boilers (130 feet) the sides are protected by 10 inches of compound armor for a depth of 8 feet; the deck over this is 1 1/2 inches thick; bulkheads of plating 8 inches thick run athwartships at the forward and after extremities of the side armor, thus forming a citadel inclosing the machinery and boilers. Forward and abaft of the citadel, at the level of its lower edge, extends a protective deck 3 inches thick, sloping downward to the sides, as in the Boston and Atlanta. The barbettes are 17 feet in diameter, and are armored with 8 inches of steel, which protects the machinery for turning, elevating and loading the gun, and an armored shute leading to below the armor deck makes the passage of ammunition safe and rapid. The pilot tower is protected by 10 inches of armor. Contrasting the protection afforded by the armor above stated with the vulnerability of the Chicago, the advantage of the increased displacement of the Imperieuse becomes apparent.



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Another type of vessel that would come up for consideration is the turreted ship Riachuelo, just completed for the Brazilian Government by an English firm on the Thames. Her dimensions are as follows: Length, 305 feet; beam, 52 feet; draft, 20 feet; displacement, 5700 tons; indicated horse-power, 6000; speed, 16 knots. The armament consist of four 9-inch guns in two turrets and six 6-inch guns on the upper deck. There is an armor belt of 11 inches thickness covered by a 2-inch deck, and the turrets have 10 inches of armor. The armor protection is by no means so complete as that of the Imperieuse, nor is the arrangement of the battery effective, but, on the other hand, the speed is greater and the displacement is 1700 tons less.

These instances are cited to show that a board cannot, except after the most careful study and examination, decide upon even the size and general dimensions of an armored vessel best suited for our purposes. Therefore, in suggesting the form for an act of Congress which will best carry out the recommendation I make in this communication, and estimating the time required for completing the vessel as three years, I would propose that the authority should be given somewhat in the following form, namely: For the construction of one armored vessel of not exceeding 7500 tons displacement, \$1,000,000; such vessel to be constructed under the same conditions as prescribed for the construction of the steel cruisers, and its armor and armament procured at a total cost not to exceed \$2,500,000.

Very respectfully,
E. SIMPSON,
Rear Admiral U. S. N.

Australian Development.—A London letter says: "Emigration is going so largely from the United Kingdom to Australia, and the latter country is likely to prove in some branches such a strong rival to the United States, that a few facts concerning labor and wages there may be of interest. During the last few years the tendency in the skilled branches has been upward, and the same thing is noticeable in agricultural labor. The wages of farm laborers have risen to £50 or thereabouts, while the Colony is capable of absorbing any amount of skilled agricultural labor without affecting the current rate of wages. Good, industrious hands are much better off in regard to food and pay than the same class in England. In New South Wales clerks receive £200 to £150 per annum; draftsmen, £4. 15/ per week; blacksmiths, 12. 8 to 10. 4 per day; plumbers, 11/ to 10/ per day; carpenters, 11/6 to 8/; painters, 11/ to 9/8 per day, &c. The working day in the case of many trades does not exceed eight hours.

The Canadian Parliament has appropriated \$30,000 for the expenses of an expedition to investigate the route by way of Hudson Bay to Liverpool. The plan is to send a steamer to spend at least one winter in the bay, and to note accurately to what extent its navigation can be relied upon for commercial purposes. It is stated that wealthy firms are ready to put a line of steamers on the route if desired facilities can be afforded, and the producers of Manitoba and the Northwest hope that the new route will secure cheaper rates of transportation to Liverpool.

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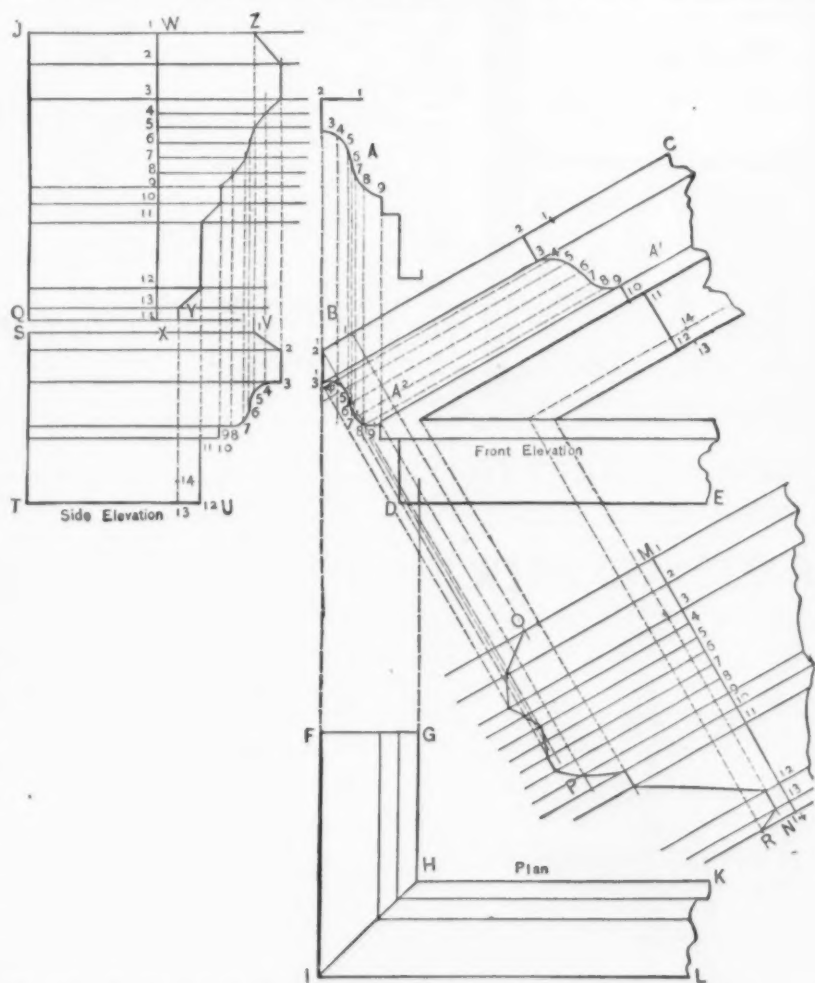


Fig. 426.—To Ascertain the Profile of a Horizontal Molding Adapted to Miter with a Given Inclined Molding at Right Angles in Plan, and the Several Miter Patterns Involved.

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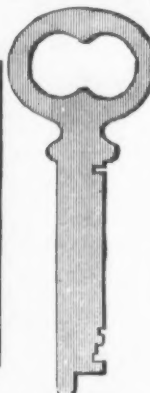
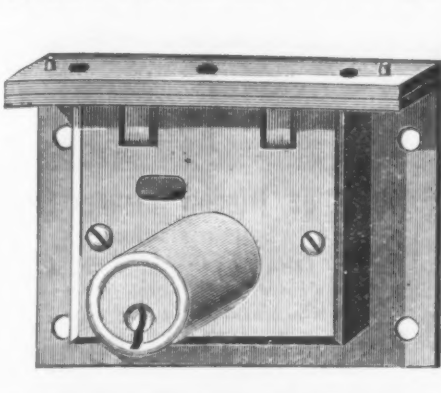
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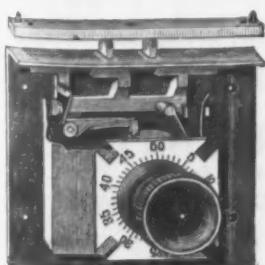
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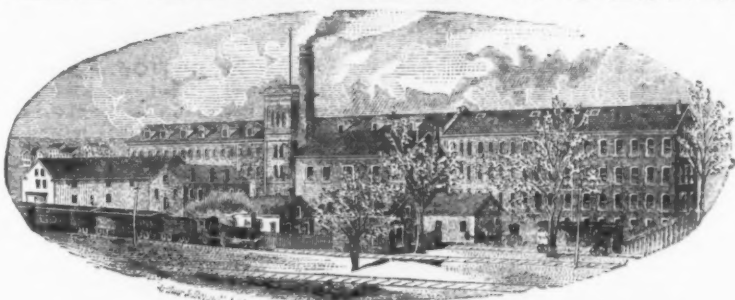
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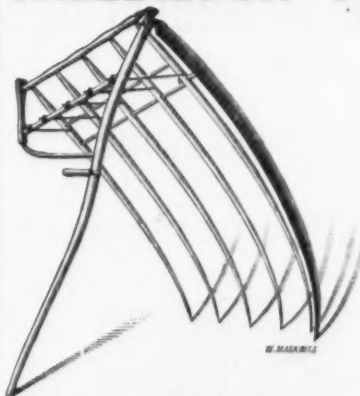


FIG. B.

Figure B shows the Creedmoor Fastening ap-
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FIG. A.

Figure A shows the Creedmoor Fastening as
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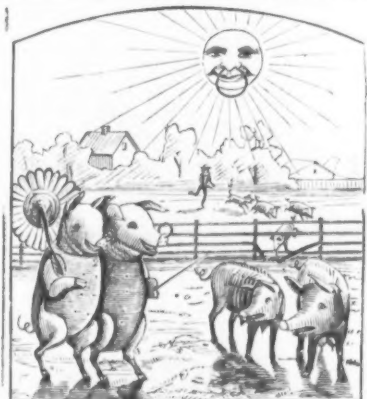
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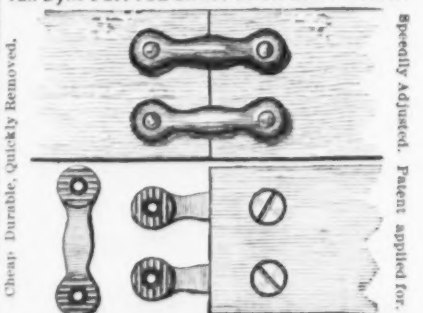
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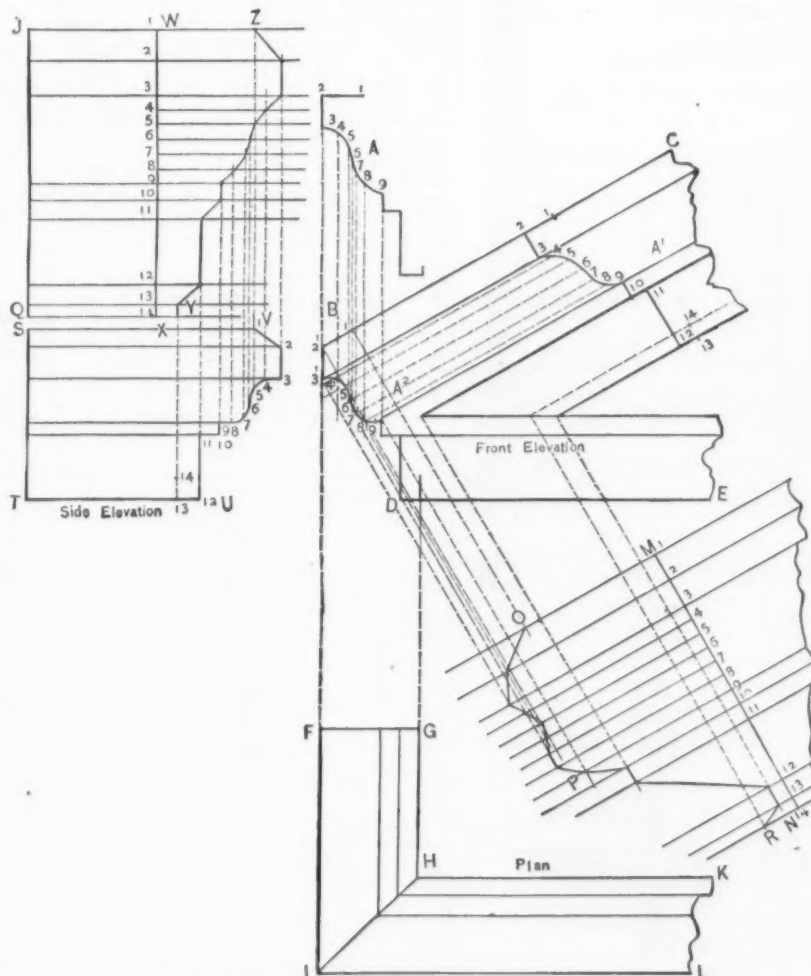


Fig. 426.—To Ascertain the Profile of a Horizontal Molding Adapted to Miter with a Given Inclined Molding at Right Angles in Plan, and the Several Miter Patterns Involved.

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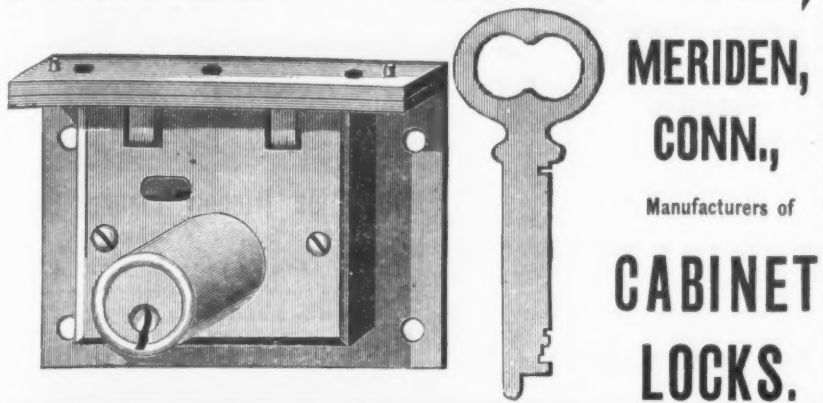
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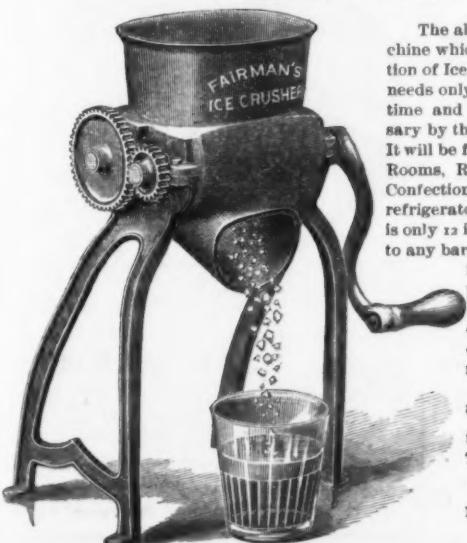
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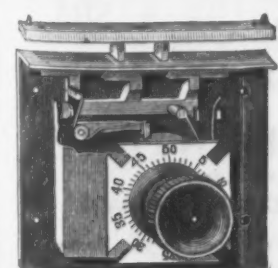
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THIS CUT SHOWS THE SAW VISE ATTACHED TO A SAMPLE STAND.

THE BEST SAW FILER'S VISE IN THE WORLD.

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Patent Noiseless

SAW VISE,

WITH RUBBER-CUSHIONED JAWS,
Which Makes Saw-Filing Noiseless.

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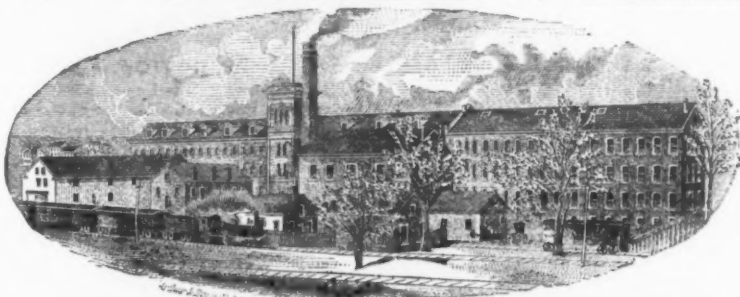
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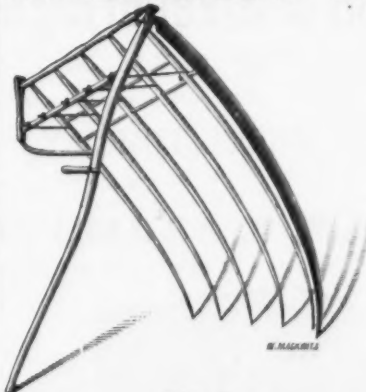


Fig. B.

Figure B shows the Creedmoor Fastening applied to Five-Fingered Dutch Bore Cradle.

The "Creedmoor" Patent Cradle Fastening is provided with an adjustable socket, by which the Cradle head may be easily attached or detached, and the Scythe can be more readily fitted or matched than the ordinary Cradle.

Also WAGON AND BUGGY SPOKES.

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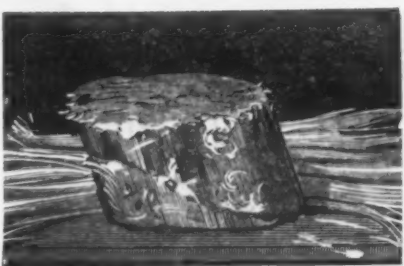
Cement Felting,

Pipe and Boiler Coverings,

Cloth, Yarns, &c.

BOLLING & LOWE,

General European Agents.



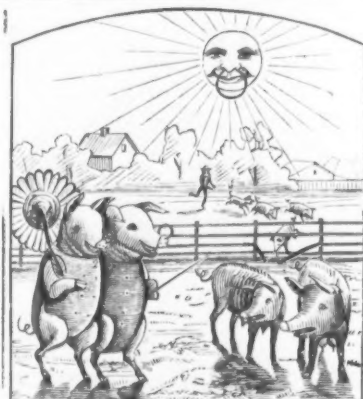
2 LAWRENCE POUNTNEY HILL, LONDON, E. C.



LE PAGE'S PATENT RUBBER POCKET PISTOL CASE

Protects the Pistol from Perspiration.
Prevents its Wearing the Pocket.
Permits Instant Withdrawal.
Flexible and Easy in the Pocket

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BLAIR'S PATENT

Hog and Pig Ringers RINGS.

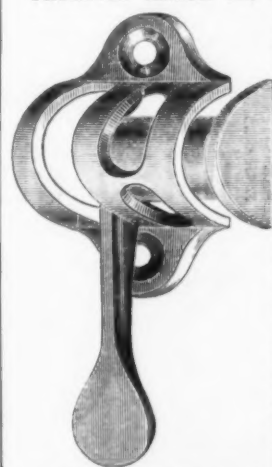
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PATENTED MARCH 6th, 1883.



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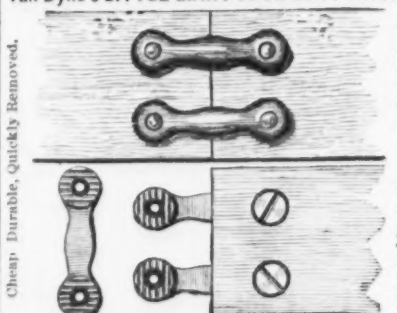
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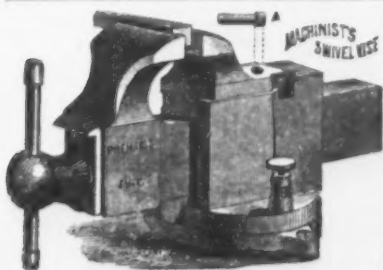


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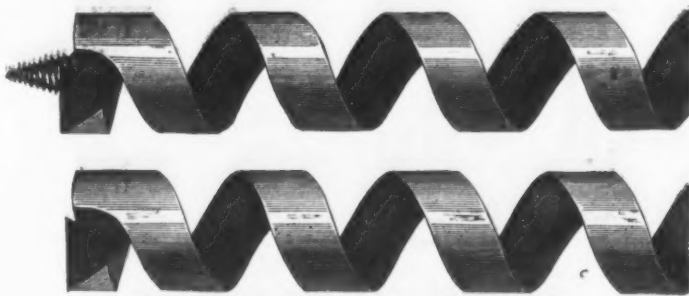
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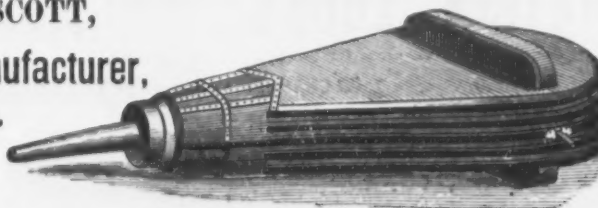


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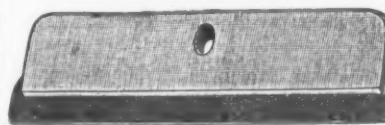


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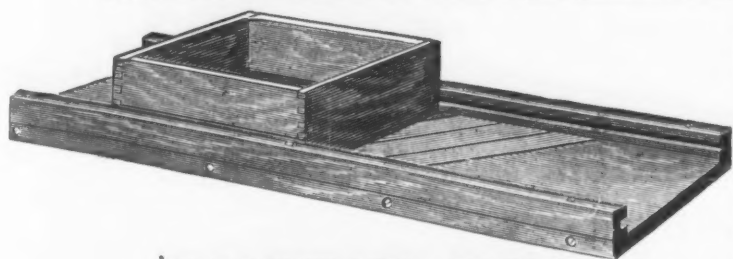
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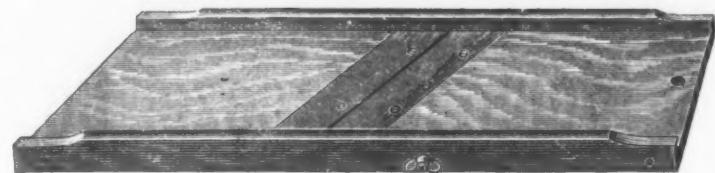
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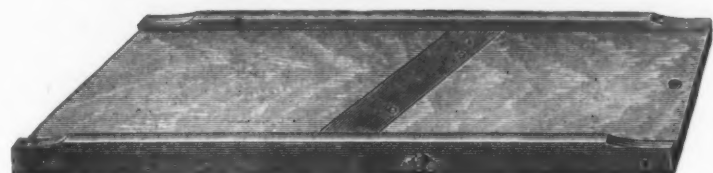
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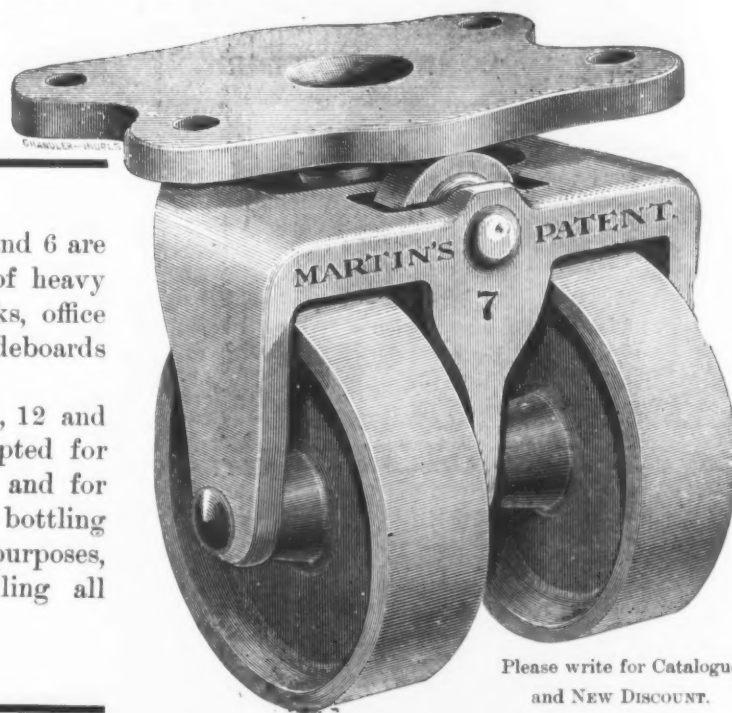
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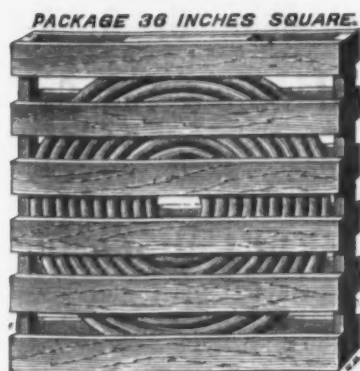
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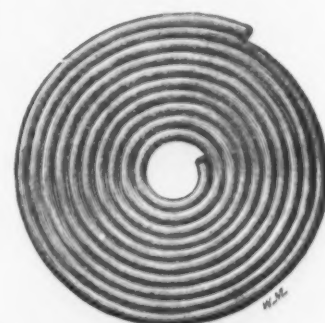


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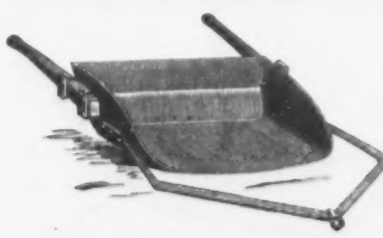
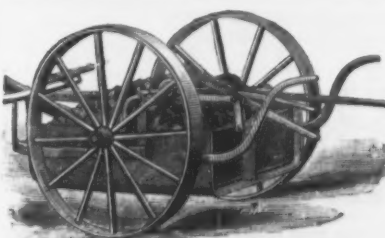
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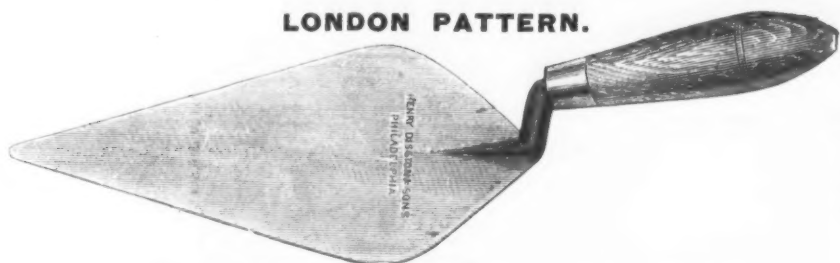
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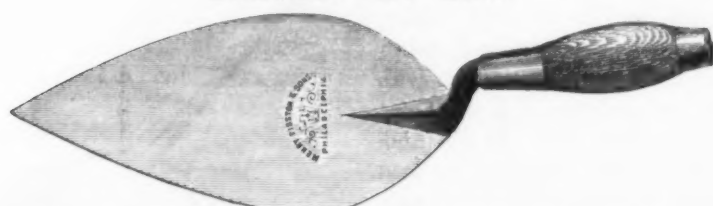
1/2 in.	8 in.	8 1/2 in.	9 in.	9 1/2 in.	10 in.	10 1/2 in.
\$7.50	8.00	8.50	9.00	9.50	10.00	10.50 per dozen.
11 in.	11 1/2 in.	12 in.	12 1/2 in.	13 in.	13 1/2 in.	14 in.
11.00	11.50	12.00	12.75	13.50	14.25	15.00 per dozen.

PHILADELPHIA PATTERN.



7 1/2 in.	8 in.	8 1/2 in.	9 in.	9 1/2 in.	10 in.	10 1/2 in.
\$9.50	10.00	10.50	11.00	11.50	12.00	12.50 per dozen.
11 in.	11 1/2 in.	12 in.	12 1/2 in.	13 in.	13 1/2 in.	14 in.
\$13.00	13.50	14.00	14.75	15.50	16.25	17.00 per dozen.

BOSTON PATTERN.



6 in.	6 1/2 in.	7 in.	7 1/2 in.	8 in.	8 1/2 in.	9 in.	9 1/2 in.	10 in.	10 1/2 in.
\$5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00 per dozen.

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Copper Circles,	Seamless Copper Tubes,
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Edge Pressed Furnace Blocks,
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FOR ROLLING MILLS, BLAST FURNACES, FOUN-
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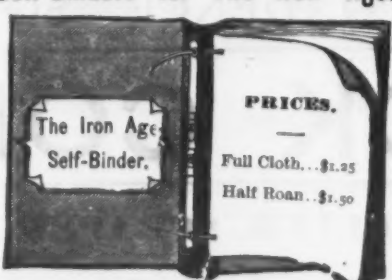
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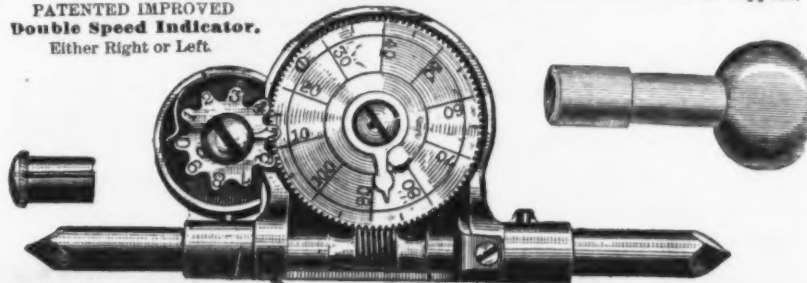
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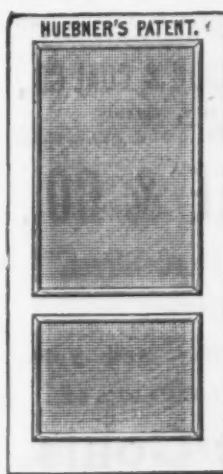
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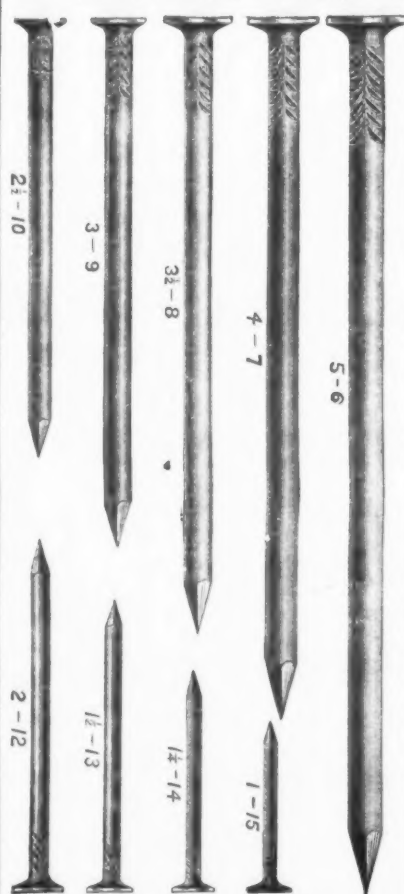
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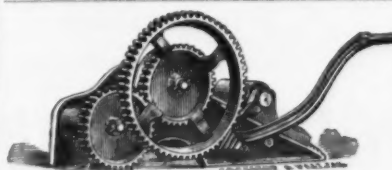
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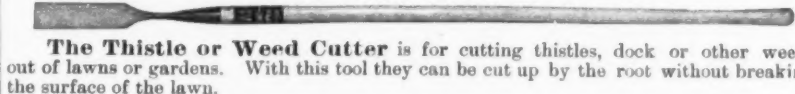
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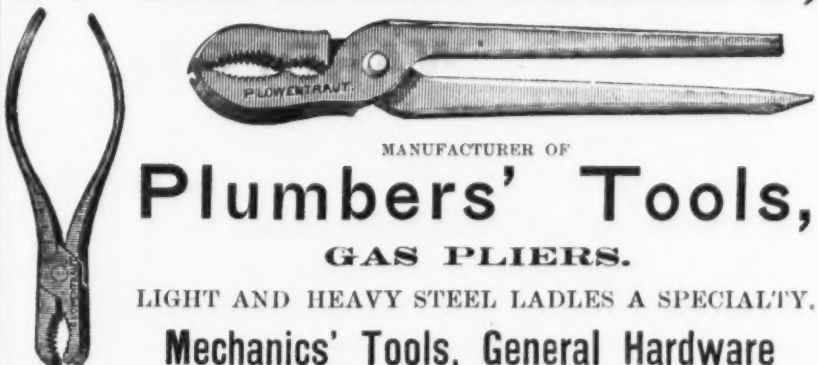
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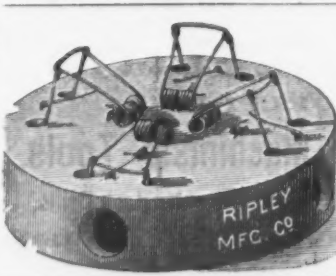
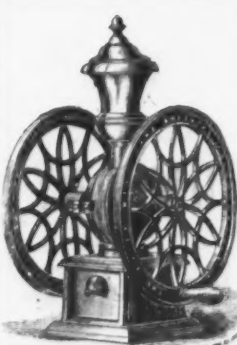
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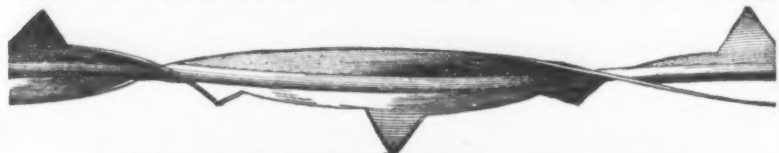
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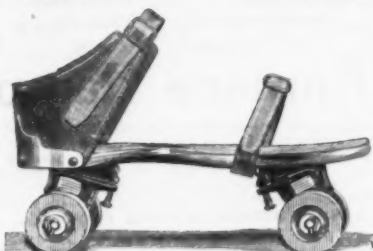
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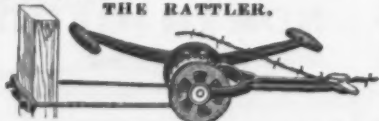
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Haish's Barb Steel Fence Wire, the Pioneer and Duplex Galvanized and Enamelled; barbs locked on both wires, and possesses more excellent quality than any fence ever produced. We also call your attention to the Jacob Haish Wire Fence Stretcher, Double Crank, Double Rope, Center Draft, and offered to the public as the best device in the world for stretching wire fences. Every Stretcher guaranteed to do perfect work or no sale. Send for sample and price list. Liberal discount to jobbers.

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IRON ROOFING.

Extra quality. Best plan in use. (Sold as low as any other,

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Cheap, strong and durable. Does not get out of repair. Every roof sold in even years satisfactory. Any mechanic can apply it. Circular and sample free. Also manufacturers of the best and cheapest Metallic Paint in use.



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This is an annual, presented free to every Subscriber to the *IRONMONGER AND METAL TRADES' ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

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With which is incorporated The Universal Engineer,

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:
APRIL 26, MAY 24, JUNE 21, JULY 19, AUGUST 16, SEPTEMBER 13, OCTOBER 11, NOVEMBER 8, DECEMBER 6, 1884, JANUARY and FEBRUARY 24, 1885.
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FOUR LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach, but in the native language of eighty millions of *German*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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THE WHOLE FOREIGN HARDWARE TRADE,

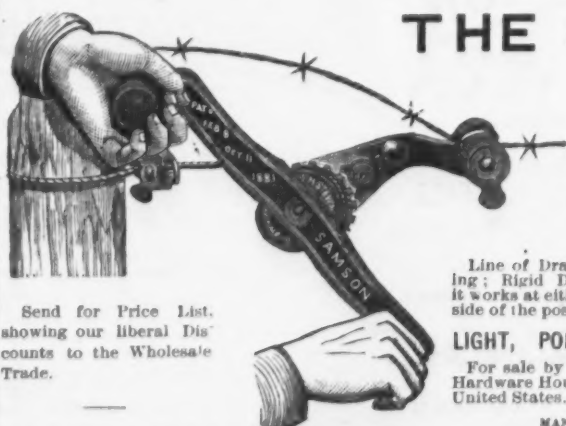
so far as our experience of more than twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.

THE SAMSON UPWARD FILTERS!

is the Best, the Simple and most Portable

WIRE STRETCHER

in the Market.



Send for Price List, showing our liberal Discounts to the Wholesale Trade.

Line of Draft direct; always Self-Adjusting; Rigid Double Handle; Double Pawl; it works at either end of the fence, at either side of the post and either side up.

LIGHT, PORTABLE, SIMPLE, SURE.

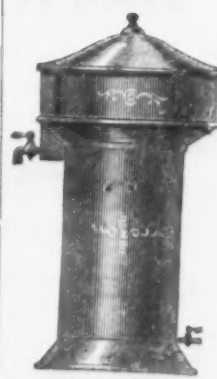
For sale by all leading wholesale Jobbing Hardware Houses and Barb Wire men in the United States.

MANUFACTURED ONLY BY

SAMSON NOVELTY WORKS, Nos. 14 & 16 Main St., De Kalb, Ills.

AND IN CANADA BY

BULLOCK HARDWARE CO., Otterville, Ontario.



Self-Cleansing,
No Repacking.

THE MOST

EFFICIENT,

DURABLE,

ORNAMENTAL,

SALEABLE

AND

THE BEST FILTERS

In the market are

manufactured by

THE STEVENS FILTER CO., TOLEDO

Liberal Discount to the trade. Send for Prices.

Rocking Grate-Bar Co.,

45 FRANKLIN STREET,
CHICAGO.

The Southern White Lead Company, of St. Louis, preparatory to making a change in their Grates, very carefully investigated the merits of the Rocking Grate-Bar. Among others, they proposed the following questions to several of those who were already using our Grates:

How long have you used the Rocking Grate-Bar?
Do you use slack or lump coal, high or low grade?
Do the Rocking Grate-Bars get out of order easily?
Do clinkers or ashes get between the clips or on the bearings and interfere with their movement?
Can the Bars be kept clean without the use of pokers?
Do the clips burn or require to be replaced often?
Is there improvement in the draught?
Is there saving in fuel? If so, about how much?
On the whole, do you consider the advantages justify the investment?

These questions were so satisfactorily answered by those who have them in use that the Company have placed their order with us for **Rocking Grate-Bars**, to go under four boilers, and they are now being fitted up.

Every one who has tested our Grate-Bars has been satisfied with their performance. Our customers are our references without an exception.

Write for Descriptive Circular and list of parties using these Grates.

We guarantee "the Best Fires from the Worst Coal, and absolutely no cleaning."

BRANCH OFFICES:

NEW YORK, 395 Canal Street,
ST. LOUIS, 703 S. Third Street.

THE ROCKING GRATE-BAR CO.

45 Franklin Street, Chicago.

MERCHANT & CO.,

525 ARCH STREET,
Philadelphia.

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ELECTRICAL COPPER WIRE,

BARE AND INSULATED, FOR

Magnets, Office Wire, Annunciators, Electric Lights, Telephone, Telegraph, &c.

BATTERY COPPER, STRIP, RODS, &c. ZINC PLATES AND RODS, SEAMLESS BRASS AND COPPER TUBING.



WROUGHT IRON TACKLE BLOCKS.

Swivel Hooks for Rope or Chain,
POLISHED GROOVES, ALL SIZES IN STOCK.

Also Pulley Blocks for Wire Rope,
Headquarters for the

IRVING BRAND WOODEN PULLEY BLOCKS,

MCCOY & SANDERS, Manufacturers,
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THE CINCINNATI CORRUGATING CO.,

CINCINNATI, OHIO.

CORRUGATED SHEET IRON.
MANUFACTURERS OF Superior Corrugated Roofing, Siding, Ceiling, Arches, Lath, Etc.
For Rolling Mills, Blast Furnaces, Foundries, Machine Shops, Car Shops, Boiler and Engine Rooms, Etc.
Fire, Water and Wind Proof. Light, Cheap and Durable.
Send for Descriptive Illustrated Catalogue.

J. M. STUTZMAN,

181 William Street, NEW YORK.

STEEL NAME STAMPS.

Steel Alphabets,
BRANDS, SEALS,
POSTMARKERS,
Door Plates.

Steel Stencil-Cutting Dies, Soap Moulds and Brass Stamps.
SEND FOR PRICE LIST.

HAIGHT & CLARK,

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MANUFACTURERS OF FINE GRAY IRON CASTINGS, ORNAMENTAL AND ART CASTINGS

OF EVERY DESCRIPTION.

Rosettes and Pickets for Wire Workers. Castings for Furniture and Piano Manufacturers. Stove and Metal Patterns of all kinds a specialty. Correspondence solicited.

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NICKEL PLATING.

BRONZING.

JOHN T. LEWIS & BROS.,

No. 231 South Front St.,
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MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge,
Orange Mineral, Linseed Oil,
AND PAINTERS' COLORS.

JOHN JEWETT & SONS

Manufacturers of the well-known brand of
WHITE LEAD.



TRADE MARK.

ALSO MANUFACTURERS OF

LINSEED OIL.

151 Front Street, NEW YORK.



The Atlantic White Lead and Linseed Oil Co.,

Manufacturers of

White Lead (Atlantic), Red Lead, Litharge, Glass Makers' Litharge and Orange Mineral;

LINSEED OIL,

Raw, Refined and Boiled.

ROBERT COLGATE & CO.,
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SALEM LEAD COMPANY,

CORRODERS AND MANUFACTURERS OF

PURE WHITE LEAD.



ALSO MANUFACTURERS OF

Lead Pipe and Narrow Sheet Lead.

SALEM, MASS.

F. A. BROWN, Treas.

FOX'S

CORRUGATED BOILER FURNACES.



1. They are made of a single steel plate, welded at the bottom, with no joint in contact with the flame.

2. They give 50 per cent. more evaporative power.

3. They throw off all scale by their elasticity.

4. They do not destroy themselves by the variation of temperature, contracting and expanding as they do like an accordion. They have not enough stiffness to work against the boiler heads.

5. They require, to comply with the rules of the Board of Trade in England, only one-half the thickness of plate of plain furnaces for equal working pressure.

6. Where a plain furnace of equal length, diameter and thickness collapsed at 25 pounds, the Corrugated stood 1000 pounds per square inch. Since five years 700 steamers were fitted with these furnaces, among them the Alaska, Oregon, City of Rome, Servia, Elbe, Werra, Fulda, &c.

Perfect safety and greatest economy combined. For particulars, apply to

Hartmann, Le Doux & Maeker,

124 PEARL ST., NEW YORK.

Sole Agents and Assignees of U. S. Patents.



Prouty's Patent PEERLESS FORCE PUMP.

Has Self-Adjustable Foot Rest.

NEW AUTOMATIC COMPENSATING
PACKING.

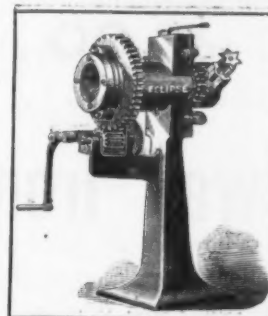
It will throw a continuous jet FROM
FORTY TO SIXTY FEET. A new pattern
jet and spray nozzle is sent with each
pump.

Especially attention is called to the
material and workmanship exhibited
in these pumps.

THE NEW ENGLAND BUTT CO.

PROVIDENCE, R. I.

NEW YORK OFFICE, 99 Chambers St.



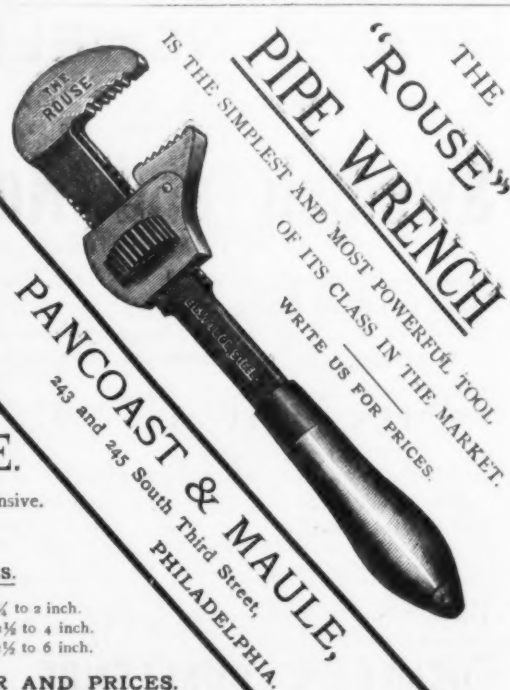
THE "ECLIPSE" HAND PIPE MACHINE.

Simple, powerful, portable, inexpensive.
With it one man can easily
cut 6-inch Pipe.

MADE IN THREE SIZES.

No. 1.—CUTS AND THREADS 1/2 to 2 inch.
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No. 3.—CUTS AND THREADS 4 1/2 to 6 inch.

SEND FOR CIRCULAR AND PRICES.



THE "ROUSE"
PIPE WRENCH
IS THE SIMPLEST AND MOST POWERFUL TOOL
OF ITS CLASS IN THE MARKET.
WRITE US FOR PRICES.
PANCOAST & MAULE,
243 and 245 South Third Street,
PHILADELPHIA.



Gentlemen.—This cut illustrates our
CAST IRON

Furnace Lamps

which are superseding entirely the Tin Lamps
wherever introduced, in consequence of their dur-
ability. They are now extensively used in the
Iron Districts of Ohio and some in Pennsylvania.
We call your attention to and solicit your order
for them, confidently asserting that they are an
A No. 1 article in every respect.

Sample sent if desired.

PRICE, \$12 PER DOZEN.

The Taylor & Boggis F'dry Co.,
CLEVELAND, O.

V. G. HUNDLEY, NORTH CAROLINA HANDLE CO.

PROPRIETOR OF



MANUFACTURER OF
Handles and Spokes,
79 Reade Street and 97 Chambers Street, NEW YORK.
HARDWARE COMMISSION MERCHANT.

SHEET-IRON BUILDING MATERIALS.

**ROOFING.
SIDING.
CEILING.**

Patent Cap Sawn Roofing, in Four Styles. In Sheets
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Crimped Iron, for Siding or Roofing for Elevators,
Mills and Factories.

Panels and Crimped Iron Ceiling. Durable, Attractive,
Fire-proof.

Send for Prices and Circulars to

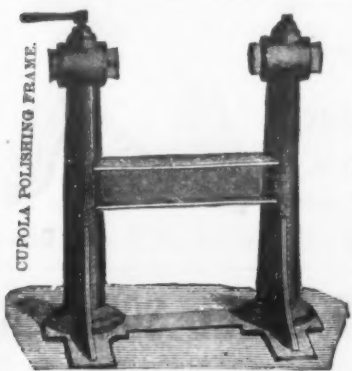
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IRON & WOOD WORKING MACHINERY

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HOISTING MACHINERY
PUMPS
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ST. LOUIS.

GAS PIPE AND FITTINGS
BOILER FLUES
BELTING
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UNION STONE COMPANY,
 38 & 40 Hawley Street, BOSTON, MASS.,

Patentees and  Manufacturers
 OF THE

UNION EMERY WHEEL.

Emery Wheel Machinery and Tools a Specialty.
 AUTOMATIC KNIFE GRINDING MACHINES.
 Wood Polishing Wheels.
EMERY, QUARTZ, CORUNDUM.
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RUB STONES FOR FOUNDRY USE.



STOCKS CARRIED AT
 THEIR WORKS IN PROVIDENCE, AND WITH
 THEIR APPOINTED AGENTS THROUGHOUT
 THE COUNTRY.



TENSILE STRAIN: 56,000 to 64,000 lbs.
 REDUCTION OF AREA—35 to 43 per cent.

WM. McILVAIN & SONS,
 MANUFACTURERS OF

BOILER PLATE

AND
CHARCOAL BLOOMS,

Locomotive, Fire Box, Flange and Shell
 Iron; Plate for Bridges and Girders; Tank
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 Wrought Pipe; Plate Iron for Fire and
 Burglar-Proof Safes.

Plates 1 1/2 inch thick to No. 14.
 CAPACITY: 30 feet long.
 70 inches wide.

No. 1 Carries 7 feet earth.
 No. 2 Carries 5 feet earth.
 No. 3 Carries 3 1/2 feet earth.

The York Pat.

Steel Scraper

The Lightest and Strongest Scraper made. The body is made of one single piece of steel. The handles are fastened inside of fold, and free from all obstructions. The body, ball and runners are all made of steel. Especially suited for contractors. Send for circulars. Manufactured by

THE YORK MFG. CO. Limited Portsmouth Ohio.

CHAMPION HOG RINGER
 RINGS AND HOLDER.

Only double ring ever invented. The only ring that will effectively keep hogs from rooting. No sharp points in the nose.

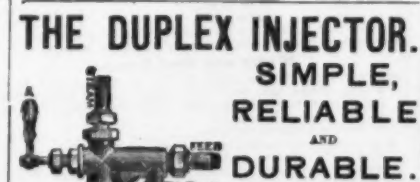


Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 50c.
CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.



Iron and Brass Rivets, Escutcheon
 Pins, Headless Screws, &c.,
 FOR MANUFACTURERS OF HARDWARE.
 Also Thumb Screws, Studs and Special Brass
 Work for Electrical Supply Manufacturers.

THE CORNWALL & PATTERSON MFG. CO.,
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THE DUPLEX INJECTOR.
 SIMPLE,
 RELIABLE,
 AND
 DURABLE.

The constantly increasing sales of this injector attest its superiority as a boiler feeder.

Manufactured by
JAMES JENKS,
 48, 50, 52 and 54 Randolph St.,
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REFRIGERATORS

TO GET THE BEST,
 Buy the Leonard Clean-
 able, with Movable Panels,
 Hardwood Carved Panels.
 Warranted First Class;
 Elegant and Durable.

MANUFACTURED BY THE
GRAND RAPIDS REFRIGERATOR CO.
 Grand Rapids, Mich.



BRASS

RODS.

W. C. DODGE. W. W. DODGE.
DODGE & SON,
 Attorneys & Solicitors of Patents
 Established in 1864.
 No. 700 Ninth St., Cor. G, Washington, D. C.
 REFERENCES GIVEN IN ALL SECTIONS.



Ice Cream Freezers,
 TORREY'S PATENT.
S. ROEBUCK & CO.,
 MANUFACTURERS,
 164 FULTON ST.,
 NEW YORK.

**THE REIHER SELF-LOCKING
 IMPROVED
 TRANSOM LIFTER**

A represents the Stationary Locking Bar; B the Self-Locking Adjusting Block; C the Operating Rod; D the Lower Bracket; E the Lifting Arm; F the Transom Bracket.

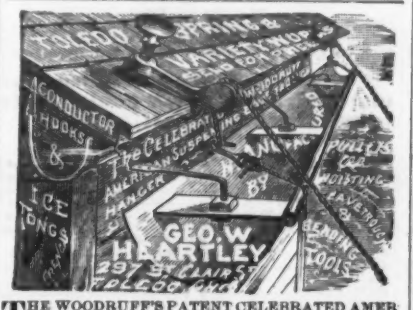
With this Adjustable Locking Bar and Lifting Arm, the opening of the transom can be made larger or smaller without the least inconvenience.

Regular Sizes of Lifters for the Trade: 1/4 in., 5/16 in. and 3/8 in.

Duplicates of Arm E, in different lengths, furnished with first order.

Catalogues furnished on application.

F. A. REIHER & CO.,
 EXCLUSIVE MANUFACTURERS
 Nos. 11 & 13 South Canal St.,
 CHICAGO ILL.



FLORENCE TACK CO.,
 FLORENCE, MASS.,
 MANUFACTURERS OF EVERY VARIETY OF
TACKS AND SMALL NAILS.
 GOODS MADE TO SAMPLE.
 Also, Fine Swedes Iron Tacks for Upholsters and Trimmers' use.

BOSTON.

Reported by Bigelow & Doves.

Avril & Vise.—No. 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

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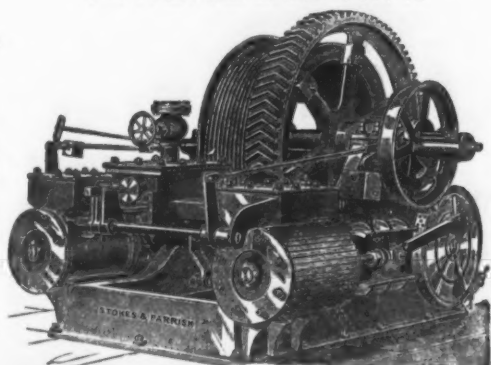
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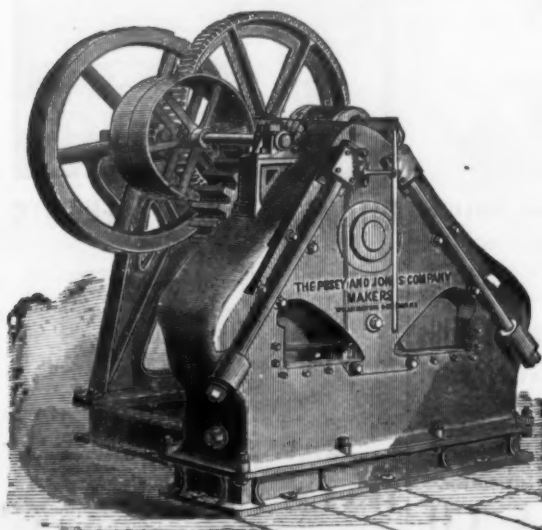
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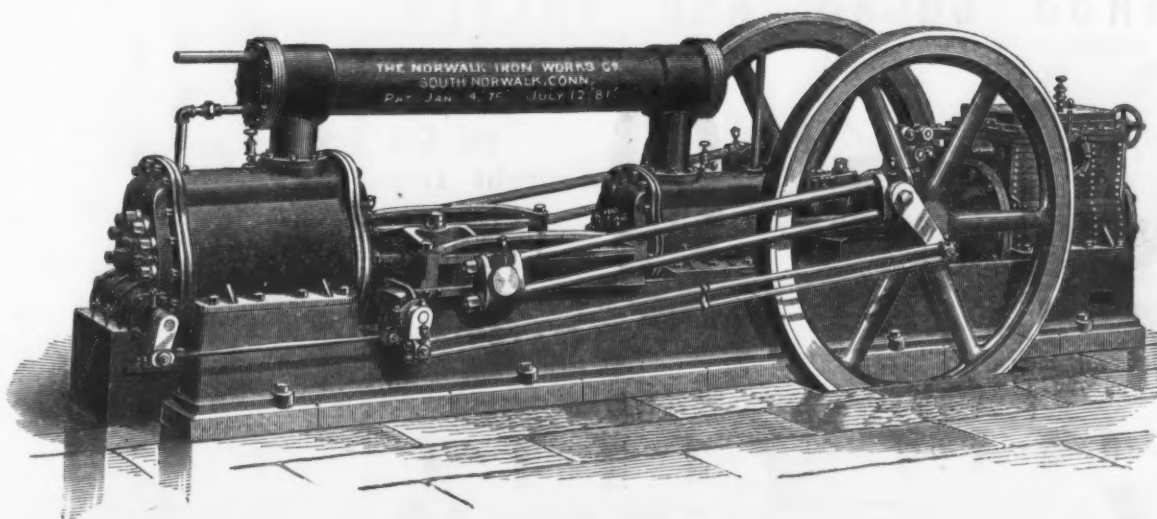
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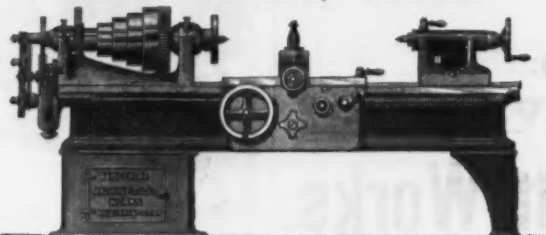
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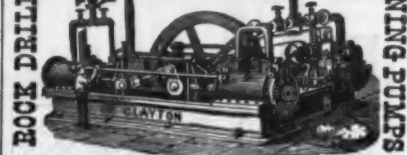
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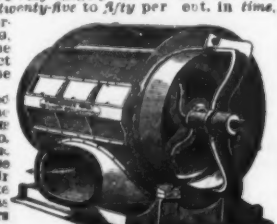
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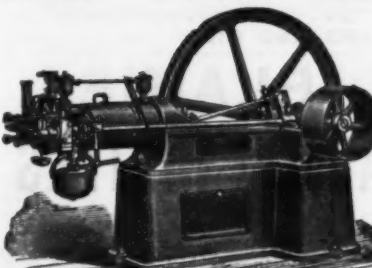
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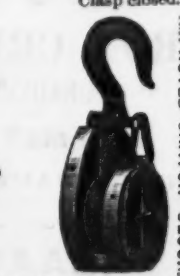
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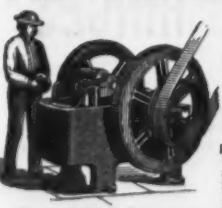
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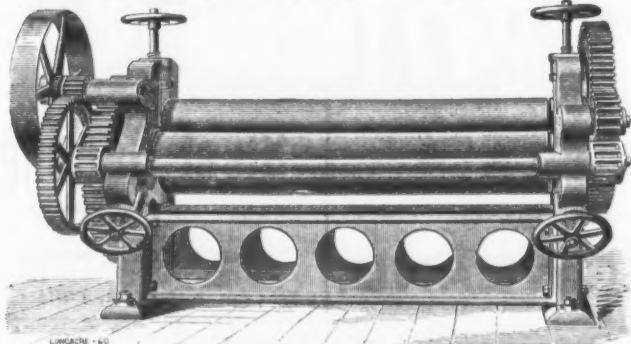
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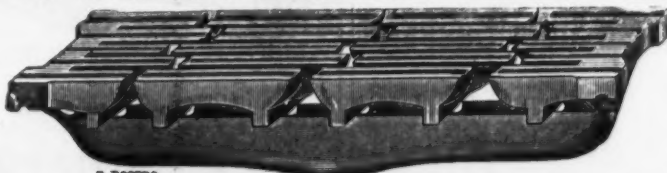
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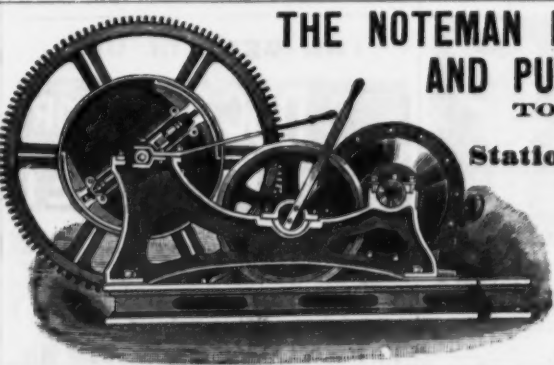
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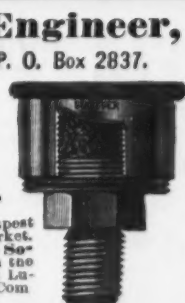
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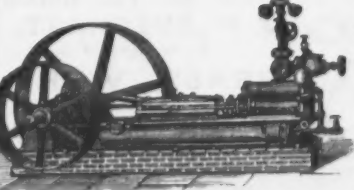
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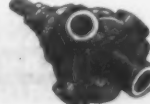
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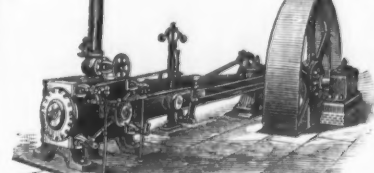
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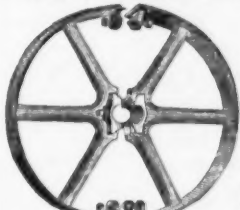
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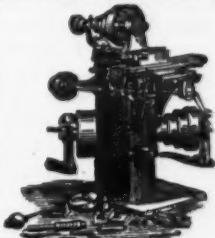
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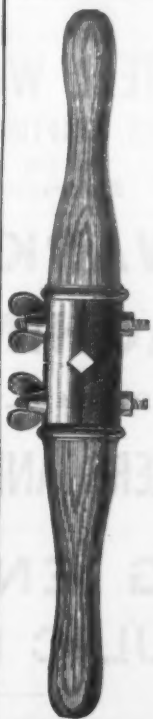
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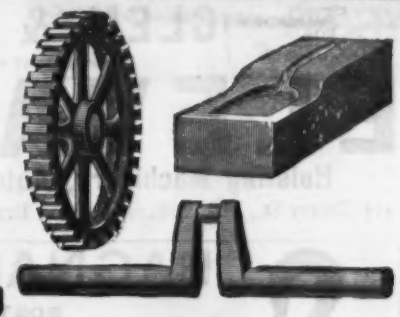
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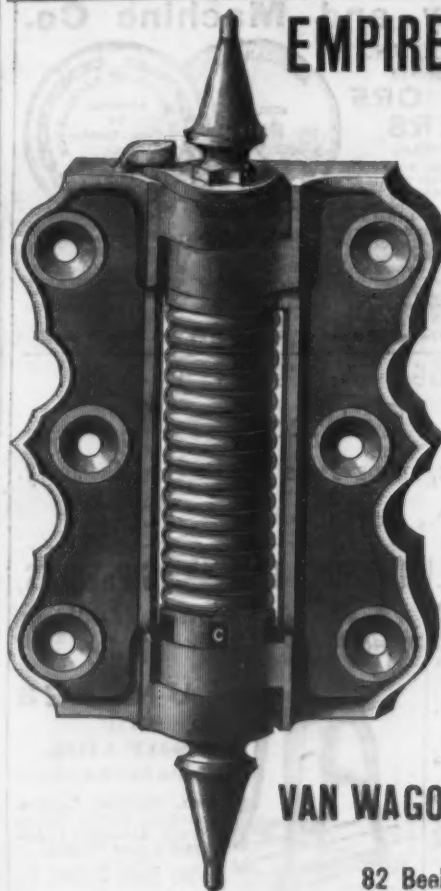
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